EXPLORING THE ROLE OF SELF-COMPASSION IN WOMEN ATHLETES' EMOTIONALLY PAINFUL EXPERIENCES OF INJURY IN SPORT

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ABSTRACT

Injury is a common and emotionally painful aspect of sport participation for female athletes. Playing through injury is normalized in sport culture; unfortunately, this practice holds short- and long-term health risks. Self-compassion has been endorsed as a resource for female athletes coping with injury and is purported to result in better health-related choices. The purpose of this study was to explore the role of self-compassion in competitive women athletes' self-care behaviours following emotionally painful experiences of injury.

Participants were 159 female athletes ranging in age from 18-49 years who completed an online survey. Five measures of emotional pain were used: negative affect, threat appraisal, badness rating, emotional difficulty, and a composite score comprised of the previous four measures. Self-compassion was negatively related to negative affect (r = -.26, p < .01), threat appraisal (r = -.19, p < .05), and the emotional pain composite score (r = -.18, p < .05) but not to badness rating or emotional difficulty rating. Self-compassion did not contribute unique variance, beyond self-esteem and athletic identity, in the emotional pain measures. The emotional pain composite score was negatively related to self-compassionate reactions (r = -.23, p < .01), positive reactions (r = -.30, p < .01), and perseverant reactions (r = -.16, p < .05) and positively related to ruminative reactions (r = .54, p < .01), passive reactions (r = .24, p < .01), and self-critical reactions (r = .48, p < .01). Unexpectedly, emotional pain was *positively* correlated with stopping training (r = .34, p < .01), reduced training frequency (r = .33, p < .01), reduced training intensity (r = .27, p < .01), and reduced training duration (r = .33, p < .01) and not significantly related to responsible reactions or stopping the session in which the injury

was incurred. Neither self-compassion nor fear of self-compassion moderated the relationship between emotional pain and self-care behaviours.

Participants also completed an open-ended question in which they described in detail everything they did to care for their injuries. A codebook was developed and used to analyze the responses. Self-care behaviours fell into the following categories: diagnostics, rest, medical devices, pharmaceuticals, treatment, and training accommodations. Athletes reported using an average of 3.38 self-care behaviours - most commonly describing obtaining a medical diagnosis and undergoing treatment. Self-compassion was not related to the number of self-care behaviours used by participants or the use of any individual behaviour. Overall, the results suggest that self-compassion plays a role in women athletes' injury experiences; however, likely due to the complex and multifaceted nature of injury, the relationships might not manifest in perfect concordance with theoretical conceptualizations.

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LIST OF ABBREVIATIONS

Abbreviation	
AIMS	Athletic Identity Measurement Scale
EDR	Emotional Difficulty Rating
ECP	Emotional Pain Composite Score
FSCS	Fear of Self-Compassion Scale
REDS	Reactions to Emotionally Difficult Scenarios Task
RSES	Rosenberg Self-Esteem Scale
RSR	Recalled Scenario Responses Task
SCS	Self-Compassion Scale

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CHAPTER 1: INTRODUCTION

1.1 REVIEW OF THE LITERATURE

1.1.1 General Introduction.

Sport participants commonly incur injuries (Manuel et al., 2002; Mosewich, Crocker, & Kowalski, 2014; Wiese-bjornstal, Smith, Shaffer, & Morrey, 1998); females at higher rates than males (Hootman, Dick, & Agel, 2007; Powell & Barber-Foss, 2000; Rauh, Koepsell, Rivara, Margherita, & Rice, 2006). Though playing through pain and injury is normalized in sport culture (Hughes & Coakley, 1991; Sabo, 2004) and frequently practiced by female athletes (Nixon, 1993; Singer, 2004), those who do it risk short- and long-term consequences for their physical health (DiFiori et al., 2014; Mainwaring, Krasnow, & Kerr, 2001). When unable to train and compete due to injury, athletes tend to feel substantial emotional pain (Shuer & Dietrich, 1997; Sutherland et al., 2014). Self-compassion has been endorsed as a resource for female athletes coping with emotionally painful challenges in sport because it entails being touched by one's suffering and having the desire to alleviate that emotional pain (Mosewich et al., 2014; Mosewich, Crocker, Kowalski, & DeLongis, 2013; Neff, 2003a; Sutherland et al., 2014). Since strong emotions lead to poor decision-making (Bruyneel, Dewitte, Franses, & Dekimpe, 2009), and self-compassion reduces negative affect (Neff, 2003b), it has been proposed that self-compassion should lead to better health-related choices (Terry & Leary, 2011). Therefore, self-compassion may have utility for female athletes when they encounter injury and may impact their ensuing self-care behaviours. However, the role of self-compassion in women athletes' experiences of injury is not yet well understood.

1.1.2 Women and Sport.

Physical activity includes "any bodily movement produced by skeletal muscles that requires energy expenditure" (World Health Organization [WHO], 2014). Sport is an organized form of physical activity engaged in for competition, play, health, well-being, and/or recreation (Edwards, Ngcobo, Edwards, & Palavar, 2005). As such, the benefits associated with regular physical activity in most cases also apply to sport participants. Decreased risk of obesity, diabetes, and cancer, as well as improved cardiopulmonary and musculoskeletal health are associated with regular physical activity (Côté & Hay, 2002; Public Health Agency of Canada, 2011; Reid, Dyck, McKay, & Frisby, 2000; Warburton, Nicol, & Bredin, 2006; WHO, 2014). Benefits for psychological well-being include: reduced stress, anxiety, and depression (Reid et al., 2000; Vuori, 2001; Warburton et al., 2006); elevated mood, self-esteem, self-efficacy, and cognitive functioning (Biddle, 1995; Reid et al., 2000; Vuori, 2001); and increased citizenship, social success, positive peer relationships, and leadership skills (Fraser-Thomas, Côté, & Deakin, 2005). Female athletes in particular attribute feelings of empowerment, self-sufficiency, independence, confidence, and self-respect to their involvement in sport, along with feelings of pride in their athletic accomplishments (George, 2005; Krane, Choi, Baird, Aimar, & Kauer, 2004; Mosewich, Vangool, Kowalski, & McHugh, 2009).

Despite these benefits, sport involvement has been connected to a number of negative outcomes, such as poor sportsmanship, teasing, body- and appearance-related concerns, disordered eating, and injury (Beals, 2000; Biddle, 1995; Fraser-Thomas et al., 2005; Slater & Tiggermann, 2011). Unfortunately, injury experiences in particular are not uncommon among athletes (Manuel et al., 2002; Mosewich et al., 2014; Wiese-bjornstal

et al., 1998), and evidence is accumulating that there are higher rates of injury among females than males participating in the same sport (Hootman et al., 2007; Powell & Barber-Foss, 2000; Rauh et al., 2006). Injury can serve as a precursor to *emotional pain* (i.e., painful emotions; Sutherland et al., 2014). Tension, anxiety, frustration, anger, depression, grief, self-pity, self-blame, disappointment, fear, panic, and worry have all been identified as emotional responses athletes may have towards injury (Chan & Grossman, 1988; Leddy, Lambert, & Ogles, 1994; Mosewich et al., 2014; Pargman, 1999; Petitpas & Danish, 1994; Smith, 1996; Smith, Scott, O'Fallon, & Young, 1990; Udry, Gould, Bridges, & Beck, 1997; Wiese-bjornstal et al., 1998). They may also experience loneliness, identity loss, decreased self-esteem, loss of confidence, and feelings of incompetence (Chan & Grossman, 1988; Leddy et al., 1994; Mosewich et al., 2014; Petitpas & Danish, 1994). Shuer and Dietrich (1997) administered the Impact of Event Scale for Traumatized Groups to 280 injured athletes. The athletes' scores fell in the same range as those of victims from the Oakland-Berkeley fire and the Loma Prieta earthquake. Thus, it appears that injuries are often perceived to be as traumatizing by athletes as catastrophic natural disasters are by their victims. Notably, no "gold standard" instrument is regularly used to measure emotional responses to injury in the sport literature.

It has been proposed that injury events are more distressing when athletes have high athletic identity. *Athletic identity* refers to the extent to which a person's self-concept is established based on the athlete role (Brewer, Van Raalte, & Linder, 1993). When they cannot participate in sport, athletes are unable to validate a portion of their identities (Taylor & Taylor, 1997). If their self-concept is not multifaceted, they might

experience a perceived loss of identity (Taylor & Taylor, 1997). Since athletic performance is variable, identity based on achievement outcomes is liable to instability (Cornelius, 1995; Nippert & Smith, 2008; Shuer & Dietrich, 1997). Therefore, people with high athletic identities are prone to less stable self-concepts and self-esteem.

Athletic identity has been identified as a risk factor for poor psychological adjustment following life events that are threatening to the athlete role (Brewer, Cornelius, Stephan, & Van Raalte, 2010; Brewer, Van Raalte, & Linder, 1993; Erpic, Wylleman, & Zupancic, 2004; Grove, Lavalle, & Gordon, 1997; Murphy, Petitpas, & Brewer, 1996; Webb, Nasco, Riley, & Headrick, 1998), including injury (Pearson & Petitpas, 1990). When athletes experience injury, people with higher athletic identities tend to be more willing to risk premature return to sport - possibly to satisfy a contingent sense of self-worth (Podlog et al., 2013). People with lower athletic identities, in contrast, perceive sport as something that they do rather than who they are. Subsequently, they experience less emotional upheaval when injured and are less likely to expedite their return to sport (Podlog et al., 2013).

1.1.3 Pain and Injury in Sport.

Although there is no universally recognized definition of injury, the following criteria are commonly accepted: (a) time loss from sport, (b) anatomical tissue damage, and (c) seeking medical attention (Pargman, 1999). Knight (2008) revised the existing "imprecise and somewhat confusing" (p. 117) classification system for athletic injuries. According to Knight, orthopaedic injuries can be acute, chronic recurring, or chronic overuse. *Acute injuries* have a sudden onset and are caused by high-intensity forces. When the same acute injury is suffered on multiple occasions it is considered a *chronic*

recurring injury. Recurring injuries can result from premature return to sport and overly aggressive activity upon return following an initial injury. The final type of injury - *chronic overuse* - develops over time from repetitive forces (e.g., tendonitis).

Though often discussed and studied together, pain and injury are distinct constructs. Pain is a complex, subjective phenomenon consisting of biological and psychological components (Pargman, 1999). The psychological component of pain involves the sufferer giving meaning to physical perceptions of pain - the biological component (Pargman, 1999). Unfortunately, due to the regularity of their pain experiences, athletes tend to accept it as an ordinary feature of their lives and subsequently adopt a nonchalant attitude toward pain and endure through it (Addison, Kremer, & Bell, 1998). Athletes tend to have higher pain tolerance than normally active controls (Tesarz, Schuster, Hartmann, Gerhardt, & Eitch, 2012); and the more athletes ignore pain, the better able they become at continuing to compete when they encounter more intense pain (Deroche, Woodman, Stephan, Brewer, & Scanff, 2011). Not only are athletes willing to endure larger amounts of pain before they will withdraw from competition compared to training (Raudenbush et al., 2012), those with a history of injury are more willing to endure through higher levels of pain than their peers without an injury history (Raudenbush et al., 2012). Furthermore, when athletes appraise their pain as threatening (i.e., as indicating harm) they are more likely to adopt an avoidant or catastrophizing coping style (Anderson & Hanrahan, 2008) and experience emotional upset (Unruh & Ritchie, 1998).

The ability to return to sport at preinjury level is often the goal of treatment and, generally, is also used in research as the outcome measure to assess successful recovery

from sport-related injury (Garrick & Requa, 2003). Unfortunately, the long-term residual effects of injury and resultant compromise of physical activity as a person ages are not well understood (Garrick & Requa, 2003). Most investigations have explored lower extremity injuries (i.e., knee and hip joints) and established strong links to osteoarthritic degeneration, gonarthrosis, and arthritis later in life (Daniel et al., 1994; Faunø & Nieslen, 1992; Gelber et al., 2000; Gillquist & Messner, 1999; Higuchi, Kimura, Shirakura, Terauchi, & Takagishi, 2000). Medical professionals should aim to minimize long-term costs of injury so people might better maintain physically active lifestyles as they age, instead of focusing on injury management and return to sport (Garrick & Requa, 2003).

Perhaps the long-term costs of sport-related injury could be minimized by properly caring for the injury when it is incurred. When athletes initiate and perform activities for the purpose of maintaining their own life, health, and well-being they are practicing *self-care* (Denyes, Orem, & Bekel, 2001). Athletes sometimes complete a practice or competition despite suffering an injury during the event (Chrisman, Quitiquit, & Rivara, 2013; Register-Mihalik et al., 2013). In doing this they risk further damage; therefore, withdrawing from the athletic event in these circumstances can be considered a self-care behaviour (DiFiori et al., 2014; Mainwaring et al., 2001). Athletes who are not required to cease their sport involvement may make other accommodations to foster recovery such as exercising caution, modifying athletic activity, and reducing the frequency of their training (Nordin-Bates et al., 2011; Patel & Nelson, 2000). Though not directly linked to physical recovery, social support contributes to psychological well-

being and provides essential assistance for athletes who are less hopeful about finding ways to reach their recovery goals (Lu & Hsu, 2013; Register-Mihalik et al., 2013).

In summation, the literature on athletes' physiological responses to pain indicates that athletes play through pain and by doing so increase their pain tolerance. Preliminary evidence indicates increased risk of osteoarthritis, gonarthrosis, and arthritis in later life might be linked with sport-related injuries. Methods for reducing these long-term consequences have not been explored; but since athletes have a tendency to expedite their return to sport (Podlog et al., 2013) appropriate self-care following injury might be an avenue to explore. The factors that play a role in athletes' behavioural management of injury need to be identified in order to effectively promote appropriate injury care in athlete populations.

1.1.4 Self-Compassion.

1.1.4.1 *Conceptualizing Self-Compassion.*

Self-compassion is one resource athletes may find useful when encountering challenges in sport, such as injury (Ferguson, Kowalski, Mack, & Sabiston, 2014a; Ferguson, Kowalski, Mack, & Sabiston, 2014b; Mosewich et al., 2014; Sutherland et al., 2014). Despite its long-established preponderance in Eastern philosophical thought, self-compassion is a relatively novel construct in the Western world. Kristin Neff (2003a) has drawn on the writings of Buddhist scholars to define self-compassion, broadening our understanding of healthy self-attitudes. Self-compassion is a balanced integration between regard for the self and others whereby one recognizes the inherent imperfection of humanity and subsequent necessity for responding to personal suffering with the same kindness one extends to others. Non-judgmental understanding is offered in response to

one's failures and inadequacies because these experiences are seen as part of the larger human experience.

Self-compassion consists of three components: self-kindness, common humanity, and mindfulness (Neff, 2003a). Self-kindness entails treating oneself with understanding and acceptance when experiencing negative events, rather than with criticism and judgment (Neff, 2003a, 2003b). The second component – common humanity - involves acknowledging one's difficulties and shortcomings as part of the shared human condition, rather than seeing them as separating or isolating (Neff, 2003a, 2003b). Finally, mindfulness involves maintaining a balanced awareness of one's thoughts and emotions; that is, neither over-identifying with nor suppressing them (Neff, 2003a, 2003b). Although conceptually distinct and "experienced differently at the phenomenological level" (Neff, 2003b, p. 89), the components of self-compassion interact so as to complement and enhance each other (Neff, 2003a, 2003b).

Self-compassion is a way of positively relating to the self that shares many of the psychological benefits associated with self-esteem but few of the pitfalls (Neff, 2003a, 2003b, Neff, 2009; Neff & Vonk, 2009). Unlike self-esteem, self-compassion is not constituted by evaluations of the self, comparisons with others, or judgments of self-worth (Harter, 1999; Neff, 2003a; Neff, 2009). Rather, it focuses on feelings of compassion toward the self and connectedness with others. Consequently, the tendencies toward narcissism, self-centeredness, and lack of concern for others associated with maintaining high self-esteem are not invoked with a self-compassionate approach (Gilbert, 2009; Leary, Tate, Adams, Allen, & Hancock, 2007; Neff, 2009). Self-compassion and self-esteem are typically moderately related (Magnus, Kowalski, &

McHugh, 2010; Neff, 2009; Neff & Vonk, 2009; Reis et al., 2015), but self-compassion offers unique benefits beyond self-esteem (Brienes & Chen, 2012; Leary et al., 2007; Neff, Kirkpatrick, & Rude, 2007; Reis et al., 2015), therefore, self-compassion has been regarded as potentially complementary to self-esteem (Magnus et al., 2010).

The distinction between self-compassion and self-esteem may hold particular relevance for injured athletes since they typically internalize injury as a personal failure or setback (Mosewich et al., 2014; Sutherland et al., 2014). When injured athletes make comparisons to healthy peers achieving athletic gains, perceptions of being "passed by" tend to prompt self-criticism and emotional pain (Sutherland et al., 2014). Because their sense of self is contingent on satisfactory sport performance people with high athletic identities have inherently unstable self-esteem and may benefit from a self-compassionate approach when sidelined by injury (Cornelius, 1995; Nippert & Smith, 2008).

1.1.4.2 Self-Compassion and Physical Well-Being.

Although Neff (2003a) proposed a conceptual link between self-compassion and behaviours that promote physical well-being over a decade ago, the majority of work in the area of self-compassion has focused on psychological well-being. The comparatively few investigations of self-compassion and physical well-being have explored smoking (Kelly, Zuroff, Foa, & Gilbert, 2010), HIV (Brion, Leary, & Drabkin, 2013; Kemppainen et al., 2013; Rose et al., 2014), eating behaviors (Adams & Leary, 2007; Breines, Toole, Tu, & Chen, 2014; Kelly, Carter, & Borairi, 2014; Kelly, Carter, Zuroff, & Borairi, 2013), physical activity (Berry, Kowalski, Ferguson, & McHugh, 2010; Ferguson et al., 2014a; Ferguson et al., 2014b; Magnus, Kowalski, & McHugh, 2010; Mosewich, Kowalski, Sabiston, Sedgwick, & Tracy, 2011; Reis et al., 2015), responses to health

threats (Terry, Leary, Mehta, & Henderson, 2013), and following doctors' recommendations (Terry et al., 2013). Though there is much to be investigated, findings thus far demonstrate the relevance of self-compassion to physical health, including in exercise and sport.

Research on self-compassion in sport has focused on female athletes because they face many challenges while in this environment (Fraser-Thomas et al., 2005; Krane, Waldron, Stiles-Shipley, & Michalenok, 2001; Martens, 1993; Mosewich et al., 2009; Nattiv et al., 2007; Ziegler et al., 1998). Self-compassion might be a valuable resource for female athletes protecting them against negative thoughts, emotions, and behaviours (Mosewich et al., 2013; Mosewich, et al., 2011; Mosewich et al., 2009; Reis et al., 2015). It is also linked to reacting to emotionally difficult situations with more positivity and perseverance and less rumination, passivity, and self-criticism (Ferguson et al., 2014b). Evidence that self-compassion is positively associated with psychological well-being (Ferguson et al., 2014a; Ferguson et al., 2014b) and negatively associated with negative thoughts and emotions (Mosewich et al., 2011; Reis et al., 2015), has been found in populations of female athletes. Reflecting on findings from their investigation of high performance athletes' management of setback in sport, Mosewich et al. (2014) advocated for the expansion of female athletes' coping resources. They endorsed self-compassion as a strategy for maintaining a balanced perspective in the face of challenging sport experiences. Mosewich et al. (2013) examined the effects of a 7-day sport-specific self-compassion intervention on negative cognitive states. The intervention was effective in managing women athletes' self-criticism, rumination, and concern over mistakes;

thereby, providing support for the utility of a self-compassionate approach when encountering challenging experiences in sport.

Conceptually, the association between self-compassion and behaviour promoting physical well-being has been suggested as follows. Since highly charged emotions can lead to poor decision making (Bruyneel et al., 2009), self-compassion, because it lowers negative affect, should promote better health-related decision making (Terry & Leary, 2011). Furthermore, because highly emotional experiences are associated with difficulty maintaining a balanced perspective, self-compassionate people should be better able to focus on their long-term goals because they can effectively manage their emotions (Terry & Leary, 2011). Applying this reasoning to injury events in sport, when emotional pain arises in response to injury, self-compassion can be extended to this emotional suffering – but not to the physical pain. Since a self-compassionate approach can only be taken in response to negative thoughts and emotions, not physical sensations, it is only when athletes are distressed by injury that self-compassion is necessary (Neff, 2003a; Neff & Dahm, in press). Self-compassionate athletes should set appropriate recovery goals, monitor progress, and adjust goals and behaviour as needed to promote their well-being, return to sport, and long-term athletic aspirations (Terry & Leary, 2011).

Our understanding of the link between self-compassion and injury is limited; however, because there is a paucity of research linking self-compassion to behaviours that promote physical well-being in athletes. Athletes sometimes feel compelled to maintain their regular training regimes despite being aware that it is against medical advice and modified activities are necessary (Mosewich et al., 2014). They struggle to make the required behavioural adjustments because they have difficulties managing self-

criticism and feelings of isolation, as well as maintaining a balanced perspective (Mosewich et al., 2014). Narratives of male (Smith, 2013) and female (Sutherland et al., 2014) athletes have highlighted the relevance of self-compassion as a way to manage self-criticisms and emotional pain resulting from sport-related injuries. In studies exploring how women athletes and exercisers act compassionately toward the physical self, taking responsibility for one's body, well-being, and decisions emerged as components of self-care (Berry et al., 2010; Ferguson et al., 2014a). These findings suggest that self-compassion might be a promising strategy for coping with the emotional pain associated with injury; consequently, leading athletes to make better decisions when caring for their injuries.

Thus far studies exploring the utility of self-compassion for setbacks in sport - including injury - have been qualitative and generated data using interviews (Mosewich et al., 2014; Sutherland et al., 2014). Generalizability is a key limitation with such study designs (Mosewich et al., 2014; Sutherland et al., 2014). Quantitatively linking self-compassion, emotional pain, and health-promoting behaviour in populations of injured athletes is a natural extension of this work that has not yet been pursued. In non-athlete populations preliminary evidence indicates self-compassion may operate as a protective psychological factor in people coping with persistent pain (e.g., obese patients; Wren et al., 2012) and poor physical health (e.g., elderly populations; Allen, Goldwasser, & Leary, 2012). In a sample of elderly people, however, Allen and colleagues (2012) found mixed results for the relationship between proactive self-care and self-compassion. Self-compassion predicted some health-promoting self-care behaviours but not others,

suggesting the connection between self-compassion and behavioural outcomes may not consistently emerge across situations as conceptually proposed.

1.1.4.3 Fear of Compassion for Self in Athletes.

Despite the benefits of treating oneself with compassion, some athletes seem hesitant to embrace this approach (Ferguson et al., 2014a; Gilbert, McEwan, Matos, & Rivis, 2011; Sutherland et al., 2014). Female athletes have identified fear of settling for mediocrity and fear of reduced motivation as reasons for their hesitancy to practice self-compassion (Ferguson et al., 2014a; Sutherland et al., 2014). That is, they fear it will impede athletic development and success. However, when feelings of self-compassion are genuine, the steps required to achieve optimal functioning and health should be taken because well-being is desired for the self (Neff, 2003a). Therefore, because they value their involvement, development, and success in sport, athletes who are self-compassionate should respond to failure and challenges with proactive behaviours rather than passivity.

Breines and Chen (2012) explored the validity of people's fear that self-compassion leads to passivity. Following initial failure on a memory task, participants in a self-compassion primed condition increased their study time (i.e., a self-improvement behaviour), which in turn predicted improved performance when the task was repeated. Breines and Chen concluded that a self-compassionate response to failure should result in improved performance through the mediating effect of self-improvement motivation. Although additional research is needed, preliminary work appears to discredit the notion that self-compassion leads to passivity. Hence, athletes' justifications for fearing self-compassion may be unwarranted.

Athletes tend to view injury as a personal failure or setback that not only stalls their progress in athletics, but may also result in a decline (Mosewich et al., 2014; Sutherland et al., 2014). Given athletes' concerns that a self-compassionate approach might thwart the achievement of their athletic potential (Ferguson et al., 2014a; Sutherland et al., 2014), they may be less inclined to experiment with self-compassion when already experiencing a setback in progress due to injury. People who fear self-compassion actively resist engaging in compassionate behaviours (Gilbert et al., 2011), which for injured athletes, would include caring for their injury. Before a self-compassion intervention is attempted with injured athletes, it is critical to determine the role fear of self-compassion plays in their injury experiences and use of self-care behaviours.

1.2 STATEMENT OF PURPOSE

Self-compassion may be a beneficial resource for women athletes when they encounter negative sport experiences (Berry et al., 2014; Ferguson et al., 2014a; Ferguson et al., 2014b; Mosewich et al., 2013; Reis et al., 2015). Although women have identified injury as a particularly difficult aspect of sport and self-compassion has been endorsed as a promising resource for coping with injury (Ferguson et al., 2014a; Ferguson et al., 2014b; Mosewich et al., 2014; Sutherland et al., 2014), little has been established about the practical utility of self-compassion in this context. Given the multifaceted nature of injury, an investigation is necessary to identify the role of self-compassion in these specific experiences. Since athletes express concerns about treating themselves with compassion, fear of self-compassion must be considered as well. Thus, the purpose of this study is to explore the role of self-compassion in competitive women athletes' self-care behaviours following emotionally painful experiences of injury.

1.3 HYPOTHESES

1. Since self-compassion lowers negative affect (Neff, 2003a), it was expected to serve a protective function in women's experiences of injury in sport and, therefore, be negatively correlated with emotional pain.

2. Self-compassion was hypothesized to contribute unique variance in emotional pain beyond self-esteem and athletic identity.

3. Given that highly charged emotions lead to poor decision making (Bruyneel et al., 2009), emotional pain was expected to be inversely related to adaptive self-care behaviours (i.e., self-compassionate reactions, positivity, perseverance, responsibility, stopping the session during which the injury was incurred, stopping training for a period of time, reduced training frequency, reduced training intensity, reduced training duration, and reporting the injury).

4. Conversely, it was hypothesized that emotional pain would be positively correlated with maladaptive behaviours (i.e., rumination, passivity, and self-criticism).

5. Self-compassion was hypothesized to show a moderating effect between emotional pain and behavioural reactions (i.e., self-compassionate reactions, positivity, perseverance, responsibility, rumination, passivity, and self-criticism) such that when they experience high levels of emotional pain, athletes who are low in self-compassion will make poor decisions and not engage in self-care behaviours whereas athletes who are high in self-compassion will be able to think clearly and make the choice to engage in health-promoting self-care behaviours (see Figure 1.1).

6. Fear of self-compassion was hypothesized to show a moderating effect between emotional pain and behavioural reactions (i.e., self-compassionate reactions, positivity,

perseverance, responsibility, rumination, passivity, and self-criticism) such that when they experience high levels of emotional pain, athletes who are high in fear of self-compassion will make poor decisions and not engage in self-care behaviours whereas athletes who are low in fear of self-compassion will be able to think clearly and make the choice to engage in health-promoting self-care behaviours (see Figure 1.2).

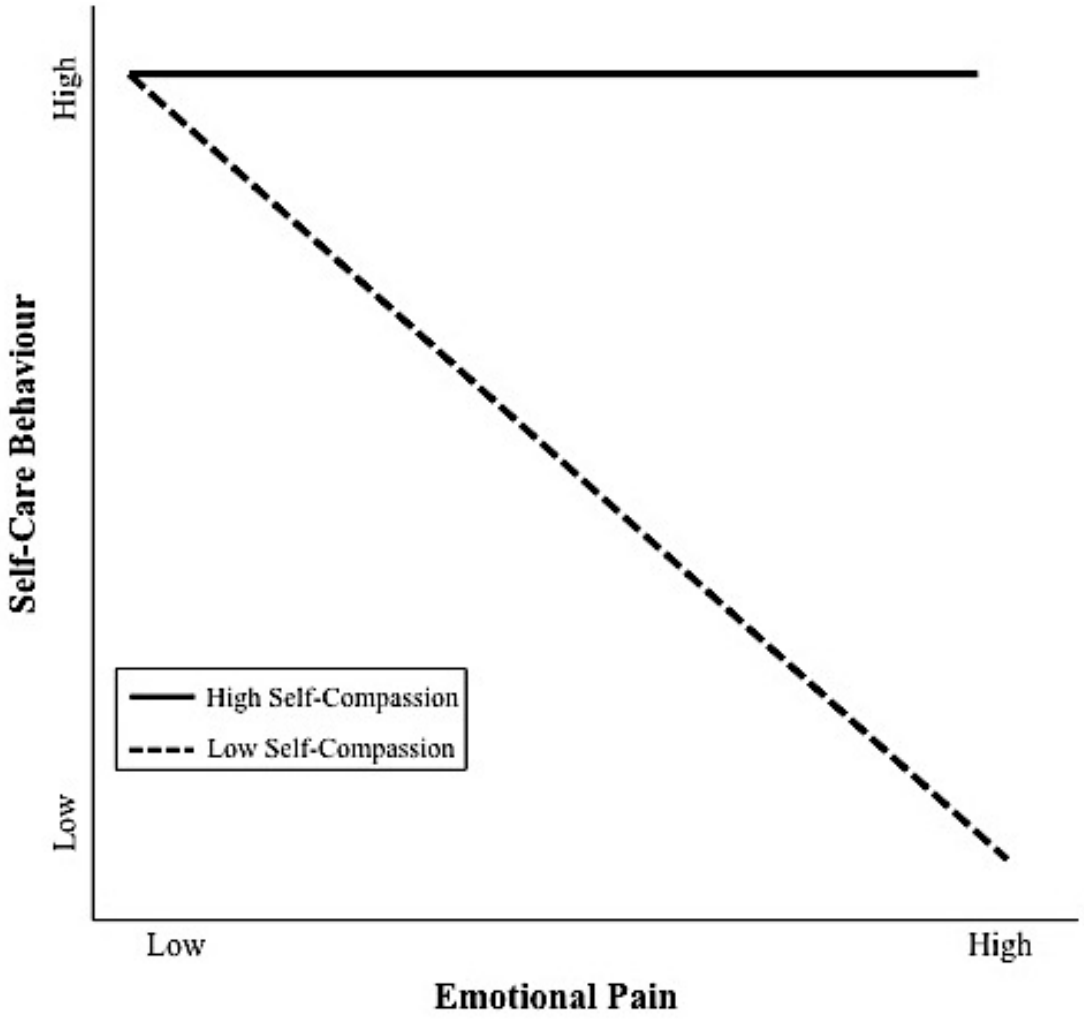

Figure 1.1. Graphic depiction of the hypothesized moderating effect of self-compassion on the relationship between emotional pain and self-care behaviour.

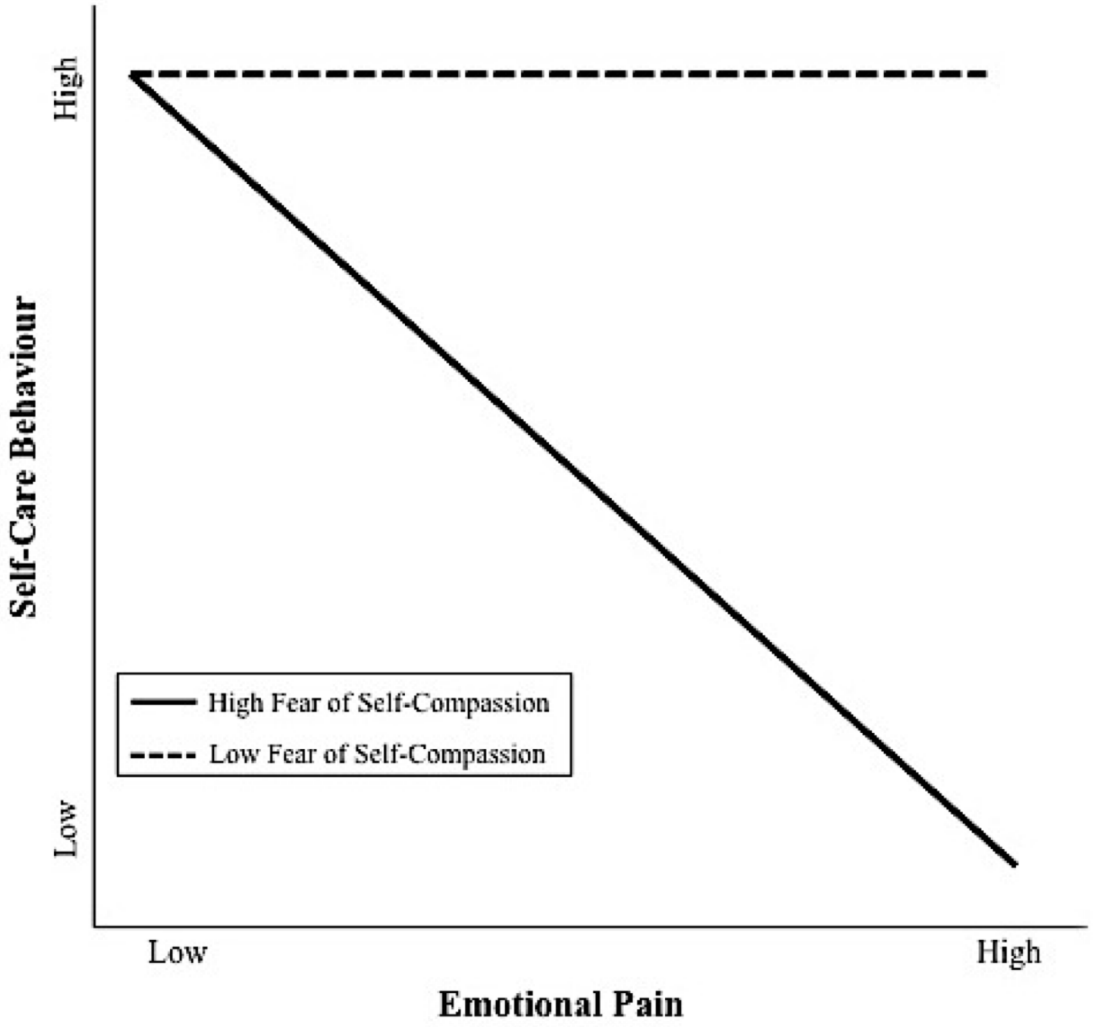

Figure 1.2. Graphic depiction of the hypothesized moderating effect of fear of compassion for self on the relationship between emotional pain and self-care behaviour.

CHAPTER 2: METHOD

2.1 RECRUITMENT AND CONSENT

After obtaining ethical approval participants were recruited using PAWS announcements and classroom announcements. PAWS is the electronic system used by the University of Saskatchewan for email, course materials, and announcements, among other things. People were eligible to participate in the study if they met the following criteria: female; over the age of 18 years; participating in competitive sport at the local, provincial, regional, national, or international level; and able to recall an experience of a sport-related injury. An announcement containing the eligibility criteria and a link the online survey (see 2.2 Measures) was posted on the PAWS system, making it accessible to every student at the University of Saskatchewan. With permission from course instructors, I made announcements in undergraduate classes encouraging athletes who met the eligibility criteria to complete the online survey.

When women accessed the survey link they were directed to an online consent form (Appendix A). The consent form detailed their right to withdraw, confidentiality and data storage protocols, how to obtain the final results, and who to contact with questions related to the study. Additionally, a brief explanation of the research purpose and procedure was provided.

2.2 PARTICIPANTS

Participants were 159 female athletes ranging in age from 18-49 years (M_{age} = 21.17, SD = 4.41), with a minimum of 5 years experience in competitive sport. The athletes had a mean self-reported weight of 66.03 kg (SD = 13.38), and a mean self-reported height of 167.49 cm (SD = 7.67). The sample was predominantly of white

ethnicity (95.0**%**), and enrolled in university at the time of participation (89.2% undergraduate, 3.8% graduate or postgraduate).

The participants represented 33 different sports from local to international levels of competition (See Table 2.1). For a typical week, athletes dedicated a mean of 10.05 hours (*SD* = 7.51, Range = 1.00 – 47.00) to their primary sport, with 20.9**%** (*n* = 33) training for their primary sport year round, 29.8% (*n* = 47) training 3 seasons[1] out of the year, 29.8% (*n* = 47) training two seasons out of the year, and 19.6% (*n* = 31) training one season out of the year.

2.3 MEASURES

2.3.1 Demographic Survey

Demographic information was collected in order to describe the sample of participants. Personal information such as age, height, weight, sport, position or role in sport, and length of involvement was obtained (Appendix B1 & B2). Various versions of similar demographic surveys have been use in published research with female athletes (Mosewich et al., 2011) and in M.Sc. Thesis research at the University of Saskatchewan (e.g., Killham, 2014).

2.3.2 Injury Recall Task

The components of the Injury Recall Task used in this study were adapted from an injury-related pain recall task developed by Anderson and Hanrahan (2008) for their research with dancers. Participants were asked to recall the most recent and significant instance of injury experienced during or as a result of sport involvement (Appendix B3). In the original task, participants are provided with a diagram of a body and instructed to

[1] From the provided options of spring, summer, fall, and winter, participants identified all of the seasons in which they were involved with their primary sport

Table 2.1

Primary sport participation frequencies and self-reported highest and current level of competition

		% of	Local		Provincial		Regional	
Primary Sport	*N*	sample	Current	Highest	Current	Highest	Current	Highest
Baseball	1	0.63						
Basketball	17	10.69	8	1	5	8	2	4
Baton Twirling	1	0.63						
Biathlon	1	0.63					1	
Cheerleading	6	3.77						
Crossfit	1	0.63	1			1		
Cycling	1	0.63	1	1				
Dance	13	8.18	1	1	2	1	6	2
Endurance Running	8	5.03	3	4	2	1	1	
Equestrian	3	1.89					1	1
Fastball	1	0.63	1			1		
Fencing	2	1.26						
Figure Skating	5	3.14	1	1	1	1		
Football	3	1.89					2	2
Gymnastics	2	1.26		1				
Ice Hockey	11	6.92	6	1	1	5	3	2
Martial Arts	1	0.63						
Pole Fitness*	1	0.63						
Power Lifting	1	0.63						
Rock Climbing	1	0.63					1	
Roller Derby	1	0.63			1	1		
Rowing	2	1.26					1	
Rugby	11	6.92	2		4	3		1
Snowboarding	2	1.26	1	1	1			1
Soccer	25	15.72	14	2	2	7	5	5
Softball	1	0.63			1			1
Speed Skating	1	0.63						
Swimming	1	0.63						
Tae Kwon-Do*	1	0.63						
Track and Field	8	5.03			1		1	1
Volleyball	23	14.47	11	1	3	4	2	5
Water Polo	1	0.63						
Wrestling	2	1.26						
Total	159	100.00	50	14	24	33	26	25

*Note: * = missing or unusable data*

Table 2.1 continued

Primary sport participation frequencies and self-reported highest and current level of competition

	National		Elite for Age		International		Not Currently
Primary Sport	Current	Highest	Current	Highest	Current	Highest	Competing
Baseball	1					1	
Basketball	1	2			1	2	
Baton Twirling			1	1			
Biathlon	1						
Cheerleading	4	2	1	1	1	3	
Crossfit							
Cycling							
Dance	3	6	1	3			
Endurance Running		2			1	1	1
Equestrian	1	2					1
Fastball							
Fencing	2	1				1	
Figure Skating	3	3					
Football		1					1
Gymnastics			1	1			1
Ice Hockey	1	2				1	
Martial Arts	1					1	
Pole Fitness*							
Power Lifting					1	1	
Rock Climbing						1	
Roller Derby							
Rowing	1	2					
Rugby	5	4		2		1	
Snowboarding							
Soccer	2	9	1	2			1
Softball							
Speed Skating					1	1	
Swimming	1	1					
Tae Kwon-Do*		1					
Track and Field	5	6	1	1			
Volleyball	6	11	1	2			
Water Polo	1			1			
Wrestling	2	2					
Total	41	57	7	14	5	14	5

*Note: * = missing or unusable data*

draw an "X" on the picture to indicate the location of their injury. To accommodate an online format, the categories used by Anderson and Hanrahan (2008) to organize and score participants' responses were presented in a multiple choice format, with athletes instructed to select the option that best described the location of their injury. The women were then provided a list of injury types and asked to choose the one that best described their recalled injury. Eighteen types of injury were included on this list – representing both acute and overuse injuries - and it has been successfully used in past epidemiology research to categorize and describe injuries in sport (Yang et al., 2012).

To facilitate recollection of the injury and collect background information, the athletes answered a series of questions pertaining to descriptive details of the injury event. Consistent with the Sports Injury Monitoring System used by the National Collegiate Athletic Association (NCAA) and research on the epidemiology of injury in collegiate sport, questions about when the injury occurred were included in this task (Arendt, Agel, & Dick, 1999; Arendt & Dick, 1995; Hootman et al., 2007; Kerr et al., 2015; Kerr et al., 2014; McGrew, Dick, Schniedwind, & Gikas, 1993). First, the women were asked if they incurred the injury during practice, training, or competition. Next, they identified during which of the athletic seasons (i.e., preseason, in season, postseason) the injury event occurred. Finally, athletes were asked who diagnosed the injury.

2.3.3 Emotional Difficulty Rating

The Emotional Difficulty Rating (EDR) task was developed by Ferguson et al. (2014b) to assess athletes' reactions to hypothetical, emotionally difficult sport-specific scenarios. Participant are instructed to imagine themselves in five different scenarios as vividly as possible and rate how emotionally difficult they would find the situation to be

on a scale from 1 (*not at all*) to 6 (*extremely*). Since athletes reflected on a lived experience rather than a hypothetical scenario, the task was modified for the present study. Instead of imagining five hypothetical situations, athletes rated only the emotional difficulty of the one injury experience that they detailed in the Injury Recall Task. They received the following instructions: "Recall the same recent and significant injury you provided information about earlier in this questionnaire package. Imagine yourself back in that situation as vividly as possible." Athletes were then asked to indicate on the 6-point scale "How emotionally difficult the situation was for you". This rating was incorporated into the Injury Recall Task (see Appendix B3).

2.3.4 Self-Care Behaviours

A survey was developed for this study to assess athletes' self-care behaviours following injury and was presented directly following the Injury Recall Task (see Appendix B3). Known behavioural correlates of favourable recovery outcomes were identified and questions created to assess athletes' use of the behaviours. Since participation in this study was not restricted to a specific injury or type of injury (i.e., acute, chronic overuse, or chronic recurring), self-care behaviours were excluded if they did not apply to injuries recognized as having high prevalence rates (e.g., sprains, dislocations, fractures, etc.). The survey was reviewed by and piloted with a group of eight current and former athletes familiar with survey research. This review and pilot study occurred before the survey was administered to research participants in order to obtain feedback about face validity and content validity. Modifications (i.e., spelling, grammar, and format changes to improve readability) were made to the instrument as necessary prior to use in this study.

2.3.4.1 Completing the athletic event.

Athletes were asked, "Did you complete the practice/training/competition in which you suffered the injury?" They selected between the response options *Yes*, *No*, or *Not Applicable*.

2.3.4.2. Time away from sport.

Athletes were asked to indicate if they stopped training and/or competing following their injury. The number of days away from sport was recorded. These two items were modified from Anderson and Hanrahan's (2008) work with injured dancers to be suitable for various sports and an online format.

2.3.4.3 Modified sport activity.

Athletes provided a *Yes/No* response to questions assessing reduced frequency, intensity, and duration of sport involvement. Athletes who reported reducing the frequency of their sport involvement were prompted to describe their reduced frequency. The same prompt followed the questions about reduced intensity and duration.

2.3.4.4 Help-seeking.

Help-seeking behaviours were addressed with questions about injury reporting and obtaining medical treatment. The athletes were asked if they reported their injury to anyone and to select from a list the people they told. Whether or not medical treatment was sought was assessed with a *Yes/No* item.

2.3.4.5 Self-care description.

An open-ended question was included to prompt participants to further describe their self-care behaviours. Participants received the following instruction: "Please list and describe in detail everything you did to care for your injury".

2.3.5 Recalled Scenario Responses Task

The Recalled Scenario Responses Task (RSR) developed by Leary et al. (2007) was slightly altered for the present study and served as the first measure of emotional pain (see Appendix B4). Typically, participants are instructed to describe in two or fewer sentences, "the worst thing that has happened during the past four days, that was or was not your fault" (p.889). However, for the present study participants were asked to, "reflect on the same recent and significant injury event you answered the previous questions about".

2.3.5.1 Badness Rating.

On a scale anchored by 1 (*not at all*) and 6 (*extremely*) they indicated how "bad" the injury event was.

2.3.5.2 Injury Significance Rating.

Athletes rated how significant "in the big scheme of things" the injury event was from 1 (*not at all*) to 6 (*extremely*). This rating was incorporated into the Injury Recall Task (see Appendix B3).

2.3.5.3 Negative Affect.

Using the same 6-point scale, athletes rated how they felt in the situation for each of twenty affect-related terms assessing sadness (*sad, dejected, down, depressed*), anxiety (*nervous, worried, anxious, fearful*), anger (*irritated, angry, hostile, mad*), embarrassment (*embarrassed, humiliated, guilty, ashamed*), and incompetence

(*incompetent, worthless, stupid, self-conscious*). A total score was calculated for each of the five emotions (sadness, anxiety, anger, embarrassment, and incompetence) by summing the items. Based on the evidence from Leary et al.'s (2007) principle factor analysis suggesting the five emotion scores load on to a single factor, a total negative affect score was calculated by summing the emotion scores. Higher negative affect scores indicate greater emotional upheaval.

Questions about responsibility for the event, behavioural reactions, thoughts, perceptions of how well the situation was handled, and overall quality of the day on which the negative event occurred are components of Leary et al.'s (2007) task that were excluded in the present study. The intent of utilizing this task was to obtain a measure of emotional pain; and because the aforementioned questions do not contribute to this end, they were not included in the procedure so as to reduce burden on participants.

2.3.6 Pain Appraisals

The Pain Appraisal Inventory (PAI; Unruh & Ritchie, 1998) is a 16-item, 6-point scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*; Appendix B5). Slight modifications were made to the PAI in order to improve its applicability to the injury experiences of women athletes. First, the phrase "your pain" in the instructions was changed to "the pain associated with your injury". Secondly, since the women answered the questions about recalled pain as opposed to existing pain, the questions were changed to past tense. The PAI contains two subscales, with eight questions addressing threat appraisal (e.g., *"I was worried about getting things done"*) and eight questions addressing challenge appraisal (e.g., *"I thought the pain was a test of my strength and ability"*). Mean scores were generated for each subscale, with scores greater than 3

indicating some degree of threat or challenge appraisal of pain. Scores on the PAI subscales have demonstrated internal consistency (α = .81 to .87) and concurrent criterion validity (Meredith, Strong, & Feeney, 2005; Unruh & Ritchie, 1998). Threat appraisals of pain on the PAI are associated with emotional upset and catastrophizing (Meredith, et al., 2005; Unruh & Ritchie, 1998; Unruh, Ritchie, & Merskey, 1999), whereas challenge appraisals are associated with positive self-statements (Unruh et al., 1999).

2.3.7 Emotional Pain Composite Score.

An emotional pain composite score (EPC) was created using the Emotional Difficulty rating, Badness rating, total Negative Affect score, and the Threat Appraisal scale on the PAI. To create the composite score the standardized scores (i.e., raw scores converted to *z*-scores) from each component of the EPC were summed (Bobko, Roth, & Buster, 2007). An a priori decision was made to equally weight the components of the EPC – a choice supported by Bobko et al. (2007) who conclude in their methodological literature review and meta-analysis that equal unit weighting is a logical approach for developing composite scores.

2.3.8 Reactions to Emotionally Difficult Scenarios

Athletes completed the Reactions to Emotionally Difficult Scenarios task (REDS) developed by Ferguson et al. (2014b). They were asked to complete a questionnaire (Appendix B6) instructing them to rate on a scale from 1 (*not at all*) to 6 (*extremely*) the degree to which they responded to the injury event with self-compassion (*4 items*), positivity (*2 items*), perseverance (*2 items*), responsibility (*2 items*), rumination (*2 items*), passivity (*2 items*), and self-criticism (*2 items*). The original questions developed by Ferguson et al. (2014b) were slightly modified from hypothetical responses to recalled

behavioural responses. Ferguson et al. (2014b) provided definitions for positivity, perseverance, responsibility, and rumination. Positivity refers to a person's tendency to embrace a positive outlook in life. Perseverance refers to a person's perception that they can overcome adversity and their tendency toward cognitive and behavioural persistence when they face adverse circumstances. A person's willingness to take accountability for their choices and the consequences, as well as their ability to identify and regulate thoughts, emotions, and behavior are encompassed by the responsibility construct. Finally, rumination refers to an over-identification or fixation on negative events and emotionally painful experiences.

To score the questionnaire a composite score for each reaction category (i.e., self-compassion, positivity, perseverance, responsibility, rumination, passivity, and self-criticism) is calculated by averaging the scores of the items comprising it. Self-compassion, positivity, perseverance, and responsibility are considered adaptive reactions to emotionally difficult events, whereas rumination, passivity, and self-criticism are considered maladaptive reactions.

2.3.9 Self-Compassion

Self-compassion was measured using the 26-item Self-Compassion Scale (SCS; Neff, 2003b; Appendix B7). The SCS consists of six subscales: Self-Kindness (5 items, e.g., *"I try to be loving towards myself when I'm feeling emotional pain"*), Common Humanity (4 items, e.g., *"I try to see my failings as part of the human condition"*), Mindfulness (4 items, e.g., *"When something upsets me I try to keep my emotions in balance"*), Self-Judgment (5 items, e.g., *"When times are really difficult, I tend to be tough on myself"*), Isolation (4 items, e.g., *"When I fail at something that's important to*

me, I tend to feel alone in my failure"), and Overidentification (4 items, e.g., *"When something painful happens I tend to blow the incident out of proportion"*). Responses to items are given on a scale from 1 (*almost never*) to 5 (*almost always*; Neff, 2003b), with the latter three subscales reverse scored. A mean score is calculated for each subscale. An overall self-compassion score is then obtained by calculating the mean of the subscale scores.

Scores from the SCS have psychometric support (Leary et al., 2007; Mosewich et al., 2011; Neff, 2003b, 2009; Neff & Beretvas, 2012; Neff, Hseih, & Dejitterat, 2005; Neff et al., 2007). In university student samples, reports of internal consistency have ranged from $\alpha = .73$ to .94 (Leary et al., 2007; Neff, 2003b; Neff et al., 2005). The SCS has also been successfully employed with female athletes ($\alpha = .87$ to .93; Mosewich et al., 2011; Reis et al., 2015). High correlations between ratings of self-compassion from therapists and romantic partners and scores on the SCS provide support for the instrument's validity (Neff & Beretvas, 2012; Neff et al., 2007).

2.3.10 Fear of Compassion for Self

The Fear of Compassion for Self Scale (FCSelf; Gilbert et al., 2011; Appendix B8) is a 15-item scale ranging from 0 (*don't agree at all*) to 4 (*completely agree*). A composite score is computed by summing responses from all items (e.g., *"Getting on in life is about being tough rather than compassionate*"), with higher scores indicating greater fear of compassion for self. Scores on the FCSelf have demonstrated internal reliability ($\alpha = .85$ to .95) in university student populations and are negatively correlated with self-compassion (Gilbert et al., 2011; Gilbert et al., 2012; Kelly, Vimalakanthan, &

Carter, 2014). The FCSelf has been associated with fear of compassion from others, fear of compassion for others, depression, anxiety, and stress (Gilbert et al., 2011).

2.3.11 Self-Esteem

The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965; Appendix B9) is a 10-item, 4-point scale ranging from 0 (*strongly disagree*) to 3 (*strongly agree*). The RSES consists of five positively worded items (e.g., *"I take a positive attitude toward myself"*) and five negatively worded items (e.g., *"At times, I think I am no good at all"*), the latter group being reverse scored. All item scores are summed to obtain a composite self-esteem score, which can range from 0 to 30. Higher self-esteem corresponds with higher scores on the RSES. Blascovich and Tomaka (1991), in reviewing psychometric properties of the RSES, provided evidence for its convergent validity, discriminant validity, internal consistency, and test-retest reliability. Studies with university students (α = .72 to .88; Choi, Meininger, & Roberts, 2006; Martin-Albo, Nunez, Navarro, & Grijalvo, 2007; Rosenberg, 1965) and female athletes (α = .87; Mosewich et al., 2011) provide further support for the internal consistency of the RSES.

2.3.12 Athletic Identity

The Athletic Identity Measurement Scale (AIMS; Brewer & Cornelius, 2001; Appendix B10) was used to measure athletic identity. Although initially developed as a 10-item instrument measuring a unidimensional construct (Brewer et al., 1993), subsequent work (e.g., Martin, Eklund, & Adams Mushett, 1997) revealing a multidimensional factor structure led to revisions (Brewer & Cornelius, 2001). The abbreviated 7-item AIMS is a multidimensional measure in which three first-order factors – social identity, exclusivity, and negative affectivity – are subordinate to one higher-

order factor, athletic identity (Brewer & Cornelius, 2001; Visek, Hurst, Maxwell, & Watson, 2008). Brewer et al. (1993) described social identity as the degree to which people perceive themselves as occupying the role of athlete (3 items, e.g., *"I consider myself an athlete"*). Exclusivity relates to the extent self-concept is based solely on a person's role as an athlete (2 items, e.g., *"Most of my friends are athletes"*). Finally, how much athletes extend poor performances in sport to their overall sense of self is described by negative affectivity (2 items, e.g., *"I feel bad about myself when I do poorly in sport"*).

Responses to items are provided on a 7-point Likert scale with 7 anchored by *strongly agree* and 1 anchored by *strongly disagree*. Scores on individual items are summed to obtain an overall score, which can range from 7 to 49. Stronger identification with the athlete role corresponds with higher scores on the AIMS. Research has shown that the 7-item AIMS is a reliable (α = .76 to .81; two week test-retest reliability = .89), and parsimonious measure for assessing athletic identity in university athlete populations (Brewer & Cornelius, 2001; Phoenix, Faulkner, & Sparkes, 2005; Visek et al., 2008).

2.4 PROCEDURE

Data collection occurred online using the program *Fluid Surveys* (fluidsurveys.com). Following completion of the consent form, participants filled out the questionnaire measures in the following order: demographic questionnaire, the Injury Recall Task, EDR, the Self-Care Behaviours Survey, Injury Significance Rating, Badness Rating, RSR, PAI, REDS, SCS, FCSelf, RSES, and AIMS. All athletes were administered the surveys in this order to maintain consistency between participants. The women were not required to complete the entire questionnaire package at one time; they

could exit and return at their convenience. After they completed all of the surveys athletes received a debriefing letter (Appendix C).

2.5 DATA ANALYSES

2.5.1 Primary Analyses

Pearson correlation was used to examine the relationships between self-compassion and emotional pain (Hypotheses 1); emotional pain and adaptive self-care behaviours (Hypothesis 3); and, emotional pain and maladaptive behaviours (Hypothesis 4). Hierarchical regression was used to test the hypothesis that self-compassion explains unique variance in emotional pain beyond athletic identity and self-esteem (Hypotheses 2). Separate hierarchical regression analyses were run with each measure of emotional pain. Since there was a lack of conclusive evidence that each selected measure would be a strong indicator of emotional pain, separate analyses were conducted to allow for the possibility that some might not be ideal indicators. Injury significance rating was entered in Step 1 of the regression to control for the variability attributed by it. It was believed a priori that athletes experience greater levels of emotional pain when their injury is more significant based on past findings that injury severity is a predictor of post-injury depression (Smith et al., 1993). Athletic identity and self-esteem were entered in Step 2 and self-compassion in Step 3, with the emotional pain measures used as dependent variables.

Hierarchical regression was also used to explore the moderating effects of self-compassion (Hypothesis 5) and fear of self-compassion (Hypothesis 6) on the relationship between emotional pain and Reactions to Emotionally Difficult Scenarios. The emotional pain composite score (EPC) was used for moderation analyses primarily

for pragmatic reasons; but also because multiplicity would have become a concern if the hypotheses had been tested with each emotional pain measure separately. Separate hierarchical regressions were conducted for each combination of self-compassion and self-care behaviour and fear of compassion for self and self-care behaviour. Regressions were conducted by entering centered values for emotional pain (EPC) and self-compassion (or fear of compassion for self) in Step 1 and the interaction term in Step 2, with self-care behaviours as dependent variables.

The assumptions of multiple regression were tested prior to running regression analyses. Normality, linearity, multicolinearity, and homoscedasticity were tested for all variables in the regression equations. Distribution of the variables and histograms of the standardized residuals were examined to assess normality (Tabachnick & Fidell, 2012). Scatterplots of the residuals were used to examine linearity and homoscedasticity. Cronbach's alpha was used to test the internal consistency of survey measures.

A coding scheme was developed to analyze participants' responses to the open-ended question directing them to describe everything they did to care for their injury. The goal was to develop categories that reflected the self-care behaviours addressed by the quantitative questions while allowing for the possibility of new behaviours emerging from the open-ended data. MacQueen, McLellan, Kay, and Milstein (1998) guidelines for coding open-ended survey responses were followed. This combined deductive/inductive process - similar to the approached used by Kowalski, Mack, Crocker, Niefer, and Fleming (2006) to classify strategies for managing physique anxious situations – was used to develop the codebook.

Initial categories were developed from the quantitative self-care behaviour questions, which integrated literature from physiology, epidemiology, psychology, and sociology to provide insight into the ways athletes respond to and cope with injury. The list was then reviewed with a researcher experienced in codebook development. Next the codebook was developed and definitions were proposed and reviewed to increase clarity. Two coders then independently coded a sample of the same 20 participant responses after which the results were compared for consistency. For each category, participants were given a "0" (indicating absence of the category in the participant's response) or a "1" (indicating presence of the category in the participant's response). Portion of agreement was Kappa = .97. Coding discrepancies were resolved by consensus agreement through discussion between the coders. Adequate support was obtained for the utility of the codebook, and the remaining 138 responses were subsequently coded by the independent coders using the codebook (Kappa = .88). Summary descriptions of the final six categories in the codebook are presented in Table 2.2.

2.5.2 Secondary Analyses

An exploratory approach was used to analyze the data from the Self-Care Behaviours Survey. The relationships between emotional pain, self-compassion, fear of compassion for self, and the dichotomous self-care behaviours (Hypotheses 3 and 4) were examined with point biserial correlations. *Z* – tests were used to examine the influence of self-compassion on the relationship between emotional pain and the dichotomous self-care behaviours. Since this portion of the study was exploratory, the extreme groups approach (EGA) was used to achieve greater statistical power (Preacher, Rucker, MacCallum, & Nicewander, 2005). Participants were divided into three groups based on

Table 2.2

Categories for coding of open ended self-care behaviour descriptions

Category	Description	Examples
Diagnostics	Seeking help from certified medical professional(s) to diagnose the injury, a process which may include diagnostic tests and procedures	Medical consultation (e.g., doctor, physiotherapist, massage therapist, etc.), X-ray, MRI, other diagnostic tests
Rest	Taking time away from sport and making accommodations in daily life to rest the injury	Time away from sport (stopped training or competing), temporary changes to daily routine/habits to promote rest and accommodate injury
Medical Devices	Use of medical devices to support, protect, or in some way promote healing and management of the injury	Orthotics, cast, crutches, brace, tape
Pharmaceuticals	Use of prescription or over-the-counter pharmaceutical medications to treat or manage the injury	Advil, pain killers, pain cream/ heat rub/ A535
Treatment	Active efforts (as opposed to rest) made to promote recovery of the injury	Surgery, strengthening, conditioning, stretching, ice/ heat, physiotherapy, chiropractor, massage therapist
Training Accommodations	Temporary or permanent changes that are made to athletes' training regime on their return to sport, for the purpose of accommodating the injury or preventing recurrence	Reduced intensity, frequency, and/or duration, gradual reintroduction to sport, different warm-up or cool down, modified activities, modified technique, permanent use of medical device

their scores on the SCS: (1) the bottom quartile, (2) the two central quartiles, and (3) the top quartile. Pearson correlation was then used to obtain an *r*-value for the relationship between individual self-care behaviours and the emotional pain composite score for each group. Next, the *r*-values were transformed to *z*-values using the Fisher's *r* to *z* transformation. *Z*-tests were conducted to test the difference between correlation coefficients from the top and bottom self-compassion quartiles. The assumption of this test - that the correlations be independent - was met as each participant was only assigned to one group.

The *Z*-test procedure outlined above was also used to examine the influence of fear of compassion for self on the relationship between emotional pain and the dichotomous self-care behaviours, substituting FCSelf scores in place of SCS scores. Once again, the assumptions of the test were met as each participant was assigned to only one FCSelf group (i.e., the bottom, middle, or top quartile).

CHAPTER 3: RESULTS

3.1 PRIMARY ANALYSES

3.1.1 Injury Background Information

Injuries occurred during competition (46.8%; *n* = 73), practice (32.7%; *n* = 51), and training sessions (19.9%; *n* = 31)[2]. Eighty percent of injuries occurred during the competitive season with fewer athletes becoming injured in the preseason (15.7%; *n* = 25) or postseason (3.8%, *n* = 6). When asked to self-classify their most recent and significant injury, 56.6% of athletes believed their injury to be acute (*n* = 90), 23.9% chronic overuse (*n* = 38), and 19.5% chronic recurring (*n* = 31). Seventy-nine percent (*n* = 126) of participants were still suffering from their injury at the time of study participation. Descriptive details about injuries are provided in Table 3.1 and Table 3.2.

3.1.2 Scale Reliabilities and Descriptive Statistics

Descriptive statistics and internal consistency scale reliabilities for the EDR, Injury Significance Rating, Badness Rating, RSR subscales, PAI, EPC, REDS, SCS, FCSelf, RSES, and AIMS are reported in Table 3.3. Descriptive statistics for these measures separated by injury classification are shown in Table 3.4.

3.1.3 Missing Data and Evaluation of Assumptions

A total of 275 people started the online survey. Respondents, and all their data for all scales (complete and incomplete), were excluded if they identified their gender as male (*n* = 2), had incomplete surveys (*n* = 113), or were missing more than two items on

[2] Three athletes selected the "Not Applicable" response option

Table 3.1

Frequency distribution of injury locations

Body Part	*N*	Percent (%)
Foot	11	7.0
Ankle	36	22.9
Lower leg	8	5.1
Knee	35	22.3
Upper leg	8	5.1
Hip	8	5.1
Torso	2	1.3
Back	9	5.7
Elbow	3	1.9
Wrist	3	1.9
Shoulder	18	11.5
Head	12	7.6
Hand	4	2.5
Total	157	99.9

Note: *N* = 159; missing (n = 1) and unusable response (n = 1)

Table 3.2

Frequency distribution of injury types

Injury Type	*N*
General Stress	18
Inflammation	39
Tendonitis	12
Deformity or weakness	20
Loose bodies or debris	2
Impingement	6
Bursitis	4
Stress fracture	9
Joint laxity	15
Sprain or strain	67
Superficial or contusion	2
Fracture	19
Dislocation	21
Nerve	5
Concussion	12
Cartilage tear	2
Ligament tear	12
Other	6

Note: More than one option could be selected

Table 3.3

Descriptive statistics and scale reliabilities for measures of emotional pain, reactions to emotionally difficult scenarios, self-compassion, fear of compassion for self, self-esteem, and athletic identity

Variable (Measure)	Items	Range	Mean	Median	SD	Skewness	Kurtosis	Cronbach's α
Emotional Difficulty Rating (EDR)	1	1.00 - 6.00	4.17	4.00	1.30	-0.48	-0.59	
Injury Significance Rating	1	1.00 - 6.00	4.40	4.00	1.16	-0.81	1.39	
Badness Rating	1	1.00 - 6.00	4.30	4.00	1.23	-0.50	-0.28	
Recalled Scenario Responses (RSR)	20							
Sadness	4	1.00 - 6.00	3.76	4.00	1.29	-0.32	-0.71	.91
Anxiety	4	1.00 - 6.00	3.65	3.75	1.28	-0.23	-0.67	.89
Anger	4	1.00 - 6.00	3.44	3.50	1.38	0.00	-1.02	.90
Self-Conscious Emotions	4	1.00 - 5.25	1.86	1.25	1.10	1.40	1.17	.89
Feelings of Incompetence	4	1.00 - 5.75	2.25	1.75	1.09	1.03	0.53	.77
Negative Affect	20	5.25 – 28.25	14.96	14.75	4.81	0.30	-0.09	.93
Pain Appraisal Inventory	16							
Threat Appraisal	8	1.00 - 5.50	3.44	3.50	1.07	-0.14	-0.81	.82
Challenge Appraisal	8	1.00 - 5.75	2.69	2.63	1.20	0.46	-0.69	.90
Emotional Pain Composite Score	4	-8.97 – 6.94	0.00	0.21	3.19	-1.64	0.94	.94
Reactions to Emotionally Difficult Scenarios (REDS)	16							
Self-Compassion	4	1.00 - 6.00	3.68	3.75	0.88	-0.19	0.36	.64
Positivity	2	1.00 - 6.00	3.25	3.00	1.19	0.17	-0.51	.85
Perseverance	2	1.00 - 6.00	3.98	4.00	1.13	-0.51	-0.16	.51
Responsibility	2	1.00 - 6.00	4.01	4.00	1.22	-0.38	-0.31	.85
Rumination	2	1.00 - 6.00	2.99	3.00	1.37	0.38	-0.76	.70
Passivity	2	1.00 - 6.00	1.37	1.00	0.83	3.04	10.37	.94
Self-Criticism	2	1.00 - 6.00	2.79	2.50	1.44	0.60	-0.68	.89
Self-Compassion Scale (SCS)	26	1.42 - 4.29	2.95	3.01	0.60	-0.20	-0.30	.91
Fear of Compassion for Self Scale (FCSelf)	15	0.00 - 51.00	18.61	17.00	12.28	0.38	-0.71	.92
Rosenberg Self-Esteem Scale (RSES)	10	4.00 - 30.00	19.63	19.00	5.06	-0.38	0.44	.90
Athletic Identity Measurement Scale (AIMS)	7	11.67 - 48.00	35.77	36.00	6.84	-0.61	0.20	.78

Note: Skewness and Kurtosis values were calculated by dividing their standard errors *(std. error of Skewness* = .19*; std. error of kurtosis* = .38*)*.

Table 3.4

Descriptive statistics for measures of emotional pain, reactions to emotionally difficult scenarios, self-compassion, fear of compassion for self, self-esteem, and athletic identity by injury type

	Acute		Chronic Overuse		Chronic Recurring	
Variable (Measure)	*M*	SD	*M*	SD	*M*	SD
Emotional Difficulty Rating (EDR)	4.02	1.32	4.42	1.45	4.29	1.01
Injury Significance Rating	4.38	1.12	4.50	1.47	4.35	0.84
Badness Rating	4.28	1.25	4.43	1.33	4.23	1.06
Recalled Scenario Responses (RSR)						
Sadness	3.71	1.34	3.99	1.25	3.65	1.19
Anxiety	3.49	1.32	4.04	1.20	3.63	1.23
Anger	3.29	1.36	3.80	1.20	3.41	1.58
Self-Conscious Emotions	1.89	1.09	1.88	1.20	1.76	1.03
Feelings of Incompetence	2.27	1.10	2.36	1.21	2.07	0.93
Negative Affect	14.65	4.90	16.06	4.97	14.51	4.27
Pain Appraisal Inventory (PAI)						
Threat	3.35	1.02	3.75	1.17	3.34	1.02
Challenge	2.67	1.21	2.80	1.25	2.60	1.13
Emotional Pain Composite Score	-0.04	3.22	-0.56	4.23	-0.63	0.01
Reactions to Emotionally Difficult Scenarios (REDS)						
Self-Compassion*	3.81	0.83	3.36	0.96	3.66	0.83
Positivity	3.33	1.25	3.09	0.95	3.18	1.30
Perseverance	4.05	1.15	3.96	0.93	3.79	1.30
Responsibility	3.97	1.28	4.20	1.24	3.87	1.01
Rumination	2.94	1.41	2.79	1.31	3.37	1.26
Passivity	1.45	0.97	1.17	0.35	1.40	0.75
Self-criticism	2.69	1.40	2.78	1.40	3.06	1.61
Self-Compassion Scale (SCS)	2.99	0.61	2.98	0.57	2.80	0.62
Fear of Compassion for Self Scale (FCSelf)	17.80	12.07	18.00	13.26	21.67	11.52
Rosenberg Self-Esteem Scale (RSES)	19.83	5.15	19.71	4.41	18.94	5.63
Athletic Identity Measurement Scale (AIMS)	35.48	6.62	36.18	7.42	36.13	6.94

Notes: N = 159; Acute (n = 90) Chronic Overuse (n = 38) Chronic Recurring (n = 31)
Degrees of freedom = 156
* = significant between group difference at $p < .05$. Athletes with acute injuries scored significantly higher on self-compassionate reactions than athletes with chronic overuse injuries.

any subscale[3] (1). Participants with one (n = 46) or two (n = 1) missing data points on a scale were retained and within-person mean substitution was used to estimate the missing value (Tabachnick & Fidell, 2012). In the case of subscales, the within-person mean for the subscale was substituted for the missing value. All data points were used in the final analysis as no outliers beyond 3 standard deviations from the mean were detected. Thus, the final sample consisted of 159 women athletes.

The following scales and variables were skewed or kurtotic: emotional difficulty rating (EDR), injury significance rating, badness rating, Threat Appraisal (PAI), Reactions to Emotionally Difficult Scenarios (REDS; perseverant, responsibility, passive, and self-critical reactions subscales), and the Athletic Identity Measurement Scale (AIMS). Non-parametric distributions were normalized through square root, logarithmic, and inverse transformations as recommended by Tabachnick and Fidell (2012).

The Passive Reactions scale was still not normally distributed after applying transformations; therefore, the variable was dichotomized in accordance with Tabachnick and Fidell's (2012) recommendation. Athletes who scored from 1-2 on the scale became the first group and athletes who scored above 2 became the second group.

All hypotheses were tested with both original and transformed data. As the conclusions drawn from hypothesis testing differed between original and transformed data, the transformed dataset was retained for hypothesis testing because it met the assumptions of correlation and multiple regression.

[3] One participant was missing both items on the Perseverant Responses scale on the REDS. Since they had an otherwise complete dataset, this athlete was retained in the final sample and the scale mean was substituted for the missing item values.

3.1.4 Tests of Hypotheses

Below is a summary of the study findings presented by hypothesis. An overview of conclusions from the hypothesis testing is shown in Table 3.5.

3.1.4.1 Hypotheses 1.

Self-compassion was expected to be negatively correlated with measures of emotional pain (i.e., emotional difficulty rating, badness rating, negative affect, threat appraisal, and emotional pain composite score). This hypothesis was partially supported (See Table 3.6). Negative affect, threat appraisal and the emotional pain composite score showed significant negative correlations with self-compassion.

3.1.4.2 Hypotheses 2.

Self-compassion was expected to contribute unique variance to emotional pain (i.e., emotional difficulty rating, badness rating, negative affect, threat appraisal, and emotional pain composite score) beyond athletic identity and self-esteem. No support was found for this hypothesis. See Table 3.7 for detailed hierarchical regression results.

3.1.4.3 Hypotheses 3.

It was hypothesized that emotional pain (EPC) would be negatively correlated with adaptive self-care behaviours. Support for this hypothesis was shown for self-compassionate reactions ($r = -.23$, $p < .01$) and positive reactions ($r = -.30$, $p < .01$). Unexpectedly, significant *positive* correlations were found between emotional pain (EPC) and stopping training for a period of time ($r = .34$, $p < .01$), reduced training frequency ($r = .33$, $p < .01$), reduced training intensity ($r = .27$, $p < .01$), and reduced training duration ($r = .33$, $p < .01$). Contrary to the hypothesis, emotional pain was not significantly related

Table 3.5

Summary of results from hypothesis testing

Hypothesis	Supported	Notable Data
1. Self-compassion would be negatively related to emotional pain.		
Emotional difficulty rating	✗	
Badness rating	✗	
Negative affect	✔	$r = -.26$ $p < .01$
Threat appraisal	✔	$r = -.19$, $p < .05$
Emotional pain composite score	✔	$r = -.18$ $p < .05$
2. Self-compassion would contribute unique variance in emotional pain beyond self-esteem and athletic identity.		
Emotional difficulty rating	✗	
Badness rating	✗	
Negative affect	✗	
Threat appraisal	✗	
Emotional pain composite score	✗	
3. Emotional pain (EPC) would be negatively related to adaptive self-care behaviours.		
Self-compassionate reactions	✔	$r = -.23$, $p < .01$
Positive reactions	✔	$r = -.30$ $p < .01$
Perseverant reactions	✔	$r = -.16$, $p < .05$
Responsibility	✗	
Stopping session	✗	
Stopping training*	?	$r = .34$, $p < .01$
Reduced frequency*	?	$r = .33$, $p < .01$
Reduced intensity*	?	$r = .27$, $p < .01$
Reduced duration*	?	$r = .33$, $p < .01$
Injury reporting	✗	

Notes: * = significant results in the opposite direction as hypothesized
** = hypothesis could not be tested as proposed. The variable was dichotomized and tests of association between correlations from high and low self-compassion groups were conducted instead.

Table 3.5 continued

Summary of results from hypothesis testing

Hypothesis	Supported	Notable Data
4. Emotional pain would be positively related to maladaptive behaviours.		
Ruminative reactions	✔	$r = .54$, $p < .01$
Passive reactions	✔	$r = .24$, $p < .01$
Self-critical reactions	✔	$r = .48$, $p < .01$
5. Self-compassion would moderate the relationship between emotional pain and behaviours.		
Self-compassionate reactions	✗	
Positive reactions	✗	
Perseverant reactions	✗	
Responsibility	✗	
Ruminative reactions	✗	
Passive reactions**	✗	
Self-critical reactions	✗	
6. Fear of compassion for self would moderate the relationship between emotional pain and behaviours.		
Self-compassionate reactions	✗	
Positive reactions	✗	
Perseverant reactions	✗	
Responsibility	✗	
Ruminative reactions	✗	
Passive reactions**	✗	
Self-critical reactions	✗	

Notes: * = significant results in the opposite direction as hypothesized
** = hypothesis could not be tested as proposed. The variable was dichotomized and tests of association between correlations from high and low self-compassion groups were conducted instead.

Table 3.6

Pearson Product Moment correlations for emotional responses to injury, self-compassion, self-esteem, and athletic identity

	1	2	3	4	5	6	7	8
1. Emotional Difficulty Rating (EDR)	---							
2. Injury Significance Rating	.46**	---						
3. Badness Rating	.65**	.53**	---					
4 Total Negative Affect (RSR)	.65**	.33**	.62**	---				
5. Threat Appraisal (PAI)	.35**	.25**	.34**	.46**	---			
6. Emotional Pain Composite (EPC)	.83**	.42**	.82**	.85**	.68**	---		
7. Self-Compassion (SCS)	-.07	.02	-.06	-.26**	-.19*	-.18**	---	
8. Self-Esteem (RSES)	-.10	-.10	.05	-.17*	-.23**	-.16*	.73**	---
9. Athletic Identity (AIMS)	.21**	.05	.15*	.23**	.11	.22**	-.16*	.09

Notes: Degrees of freedom (157)
* $p < .05$ (two-tailed)
** $p < .01$ (two-tailed)

Table 3.7

Hierarchical multiple regression analysis with athletic identity, self-esteem, and self-compassion predicting emotional responses to injury controlling for injury significance

Variable (Measure)	B	SE B	β	R^2	Δ R^2
Emotional Difficulty (EDR)					
Step 1				.13	.13***
Injury Significance	0.12	0.03	.36***		
Step 2				.20	.07**
Injury Significance	0.12	0.02	.37***		
AIMS	0.01	0.00	.22**		
RSES	-0.01	0.01	-0.17*		
Step 3				.21	.01
Injury Significance	0.13	0.02	.38***		
AIMS	0.02	0.00	.26**		
RSES	-0.02	0.01	-.30**		
SCS	0.11	0.07	.18		
Badness Rating					
Step 1				.26	.26***
Injury Significance	0.17	0.02	.51***		
Step 2				.29	.04*
Injury Significance	0.17	0.02	.51***		
AIMS	0.01	0.00	.16*		
RSES	-0.01	0.01	-.13		
Step 3				.30	.00
Injury Significance	0.17	0.02	.52***		
AIMS	0.01	0.00	.18*		
RSES	-0.01	0.01	-.19		
SCS	0.05	0.07	.08		
Negative Affect (RSR)					
Step 1				.08	.09***
Injury Significance	1.25	0.32	.30***		
Step 2				.17	.10***
Injury Significance	1.30	0.30	.31***		
AIMS	0.17	0.05	.24**		
RSES	-0.22	0.07	-.23**		
Step 3				.18	.01
Injury Significance	1.27	0.30	.31***		
AIMS	0.14	0.05	.20*		
RSES	-0.09	0.11	-.09		
SCS	-1.42	0.89	-.18		

Notes: Degrees of freedom at step one = 157, at step two = 155, at step three = 154.
* = $p < .05$
** = $p < .01$
*** = $p < .001$
# = subscale analysis

Table 3.7 continued

Hierarchical multiple regression analysis with athletic identity, self-esteem, and self-compassion predicting emotional responses to injury controlling for injury significance

Variable (Measure)	B	SE B	β	R^2	Δ R^2
# Threat Appraisal (PAI)					
Step 1				.05	.05**
Injury Significance	0.06	0.02	.23**		
Step 2				.13	.08**
Injury Significance	0.07	0.02	.25**		
AIMS	0.01	0.00	.13		
RSES	-0.02	0.01	-.27***		
Step 3				.13	.00
Injury Significance	0.07	0.02	.25**		
AIMS	0.01	0.00	.14		
RSES	-0.02	0.01	-.29**		
SCS	0.02	0.00	.03		
Emotional Pain (EPC)					
Step 1				.19	.19***
Injury Significance	1.19	0.20	.43***		
Step 2				.29	.10***
Injury Significance	1.23	0.19	.45***		
AIMS	0.11	0.03	.23***		
RSES	-0.15	0.04	-.24**		
Step 3				.29	.00
Injury Significance	1.24	0.19	.45***		
AIMS	0.11	0.03	.24**		
RSES	-0.17	0.07	-.27*		
SCS	0.18	0.56	.04		

Notes: Degrees of freedom at step one = 157, at step two = 155, at step three = 154.
* = $p < .05$
** = $p < .01$
*** = $p < .001$
# = subscale analysis

to taking responsibility, stopping the session during which the injury was incurred or reporting the injury. See Table 3.8 for detailed correlation results.

3.1.4.4 Hypotheses 4.

The hypothesis that emotional pain (EPC) would be positively correlated with maladaptive behaviours was fully supported. Significant positive relationships were found between emotional pain and ruminative reactions ($r = .54$, $p < .01$), passive reactions ($r = .24$, $p < .01$), and self-critical reactions ($r = .48$, $p < .01$).

3.1.4.5 Hypotheses 5.

Self-compassion was expected to moderate the relationships between emotional pain (EPC) and Reactions to Emotionally Difficult Scenarios. No support was found for this hypothesis as all interaction effects were non-significant (See Table 3.9).

3.1.4.6 Hypotheses 6.

Fear of compassion for self was expected to show a significant moderating effect between emotional pain (EPC) and Reactions to Emotionally Difficult Scenarios. No support was found for this hypothesis as all interaction effects were non-significant (See Table 3.10).

3.1.5 Self-Care Description

Of the 159 women who provided complete responses to the survey questions, 158 filled out the open-ended follow-up self-care description[4]. The women reported an average of 3.38 ($SD = 1.03$) self-care behaviours per participant. Obtaining a medical diagnosis and undergoing treatment were the most commonly reported behaviours among athletes (Table 3.11). Self-compassion was not related to the number of self-care

[4] Participants were not required to answer every question. They could skip any question(s) they did not wish to provide answers for.

Table 3.8

Correlations for emotional pain, self-compassion, fear of compassion for self, and behavioural responses to injury

Variables (Measures)	1	2	3	4.a	4.b	4.c	4.d	4.e	4.f
1. Emotional Pain (EPC)	---								
2. Self-Compassion (SCS)	-.18*	---							
3. Fear of Compassion for Self (FCSelf)	.12	-.56**	---						
4.a # Self-Compassionate Reaction (REDS)	-.23**	.41**	-.27**	---					
4.b # Positive Reaction (REDS)	-.30**	.46**	-.26**	.50**	---				
4.c # Perseverant Reaction (REDS)	-.16**	.29**	-.11	.30**	.50**	---			
4.d # Responsibility (REDS)	.11	.22**	-.09	.27**	.26**	.35**	---		
4.e # Ruminative Reaction (REDS)	.54**	-.19*	.18*	-.30**	-.30**	-.12	-.04	---	
4.f # Passive Reaction (REDS)	.24**	-.22**	.06	-.10	-.24**	-.38**	-.24**	.21**	---
4.g # Self-Critical Reaction (REDS)	.48**	-.34**	.35**	-.44**	-.33**	-.01	.01	.48**	.12
5. Stopped Session	-.14	-.03	.14	-.01	.04	.13	-.18*	-.07	-.24**
6. Stopped Training	.34**	.05	-.21**	.09	-.11	-.09	.18*	.11	.13
7. Reduced Frequency	.33**	.02	-.12	-.07	-.11	-.07	.22**	.13	.05
8. Reduced Intensity	.27**	.01	-.14	-.05	-.10	-.13	.13	.02	.04
9. Reduced Duration	.33**	-.01	.00	-.01	-.02	-.11	.21**	.11	.11
10. Injury Reporting	-.07	-.04	-.08	.02	.02	.01	.09	-.19*	-.04*

Notes: Pearson Product Moment correlations were used for variables 1 – 4.g. and Point-biserial correlations were used for variables 5 – 10
Degrees of Freedom (157)
* $p < .05$
** $p < .01$
# = subscales

Table 3.8 continued

Correlations for emotional pain, self-compassion, fear of compassion for self, and behavioural responses to injury

Variables (Measures)	4.g	5	6	7	8	9	10
1. Emotional Pain							
2. Self-Compassion (SCS)							
3. Fear of Compassion for Self (FCSelf)							
4.a # Self-Compassionate Reaction (REDS)							
4.b # Positive Reaction (REDS)							
4.c # Perseverant Reaction (REDS)							
4.d # Responsibility (REDS)							
4.e # Ruminative Reaction (REDS)							
4.f # Passive Reaction (REDS)							
4.g # Self-Critical Reaction (REDS)	---						
5. Stopped Session	.00	---					
6. Stopped Training	-.06	-.33**	---				
7. Reduced Frequency	.00	-.21**	.42**	---			
8. Reduced Intensity	-.05	-.18*	.34**	.52**	---		
9. Reduced Duration	.05	-.36**	.36**	.52**	.44**	---	
10. Injury Reporting	-.06	-.05	.02	.00	-.02	-.01	---

Notes: Pearson Product Moment correlations were used for variables 1 – 4.g. and Point-biserial correlations were used for variables 5 – 10
Degrees of Freedom (157)
* $p < .05$
** $p < .01$
# = subscales

Table 3.9

Moderated regression analysis with emotional pain and self-compassion predicting behavioural responses to injury

Variable (Measure)	B	SE B	β	R^2	Δ R^2
# Self-Compassion (REDSsc)					
Step 1				.19	.19***
EPC	-0.05	0.02	-.17*		
SCS	0.55	0.11	.38***		
Step 2				.20	.00
EPC	-0.05	0.02	-.16*		
SCS	0.53	0.11	.37***		
EPC x SCS	0.03	0.03	.07		
# Positive (REDSpos)					
Step 1				.26	.26***
EPC	-0.08	0.03	-.23**		
SCS	0.83	0.14	.42***		
Step 2				.26	.00
EPC	-0.08	0.03	-.23**		
SCS	0.83	0.14	.42***		
EPC x SCS	-0.01	0.04	-.01		
# Perseverant (REDSper)					
Step 1				.10	.10***
EPC	0.01	0.01	.11		
SCS	-0.15	0.04	-.27**		
Step 2				.10	.00
EPC	0.01	0.01	.11		
SCS	-0.14	0.04	-.26**		
EPC x SCS	-0.01	0.01	-.04		
# Responsibility (REDSres)					
Step 1				.06	.06**
EPC	-0.02	0.01	-.15		
SCS	-0.14	0.05	-.23**		
Step 2				.07	.01
EPC	-0.02	0.01	-.15		
SCS	-0.15	0.05	-.24**		
EPC x SCS	0.02	0.01	.10		
# Ruminative (REDSrum)					
Step 1				.29	.29***
EPC	0.22	0.03	.52***		
SCS	-0.23	0.16	-.10		
Step 2				.29	.00
EPC	0.22	0.03	.52***		
SCS	-0.21	0.16	-.09		
EPC x SCS	-0.03	0.04	-.05		

Notes: Degrees of freedom at step one = 156, at step 2 = 155.
* = $p < .05$
** = $p < .01$
** = $p < .001$
# = subscale analysis
EPC X SCS = Emotional Pain Composite and Self-Compassion interaction term

Table 3.9 continued

Moderated regression analysis with emotional pain and self-compassion predicting behavioural responses to injury

Variable (Measure)	B	SE B	β	R^2	Δ R^2
# Self-Critical (REDSscr)					
Step 1				.30	.30***
EPC	0.03	0.01	.44***		
SCS	-0.10	0.03	-.26***		
Step 2				.30	.00
EPC	0.03	0.01	.44***		
SCS	-0.10	0.03	-.26***		
EPC x SCS	0.00	0.01	-.04		

Notes: Degrees of freedom at step one = 156, at step 2 = 155.
* = $p < .05$
** = $p < .01$
** = $p < .001$
# = subscale analysis
EPC X SCS = Emotional Pain Composite and Self-Compassion interaction term

Table 3.10

Moderated regression analysis with emotional pain and fear of compassion for self predicting reactions to difficult scenarios and self-care behaviours

Variable (Measure)	B	SE B	β	R^2	Δ R^2
# Self-Compassion (REDSsc)					
Step 1				.10	.11***
EPC	-0.06	0.02	-.20**		
FCSelf	-0.02	0.01	-.24**		
Step 2				.10	.00
EPC	-0.06	0.02	-.21**		
FCSelf	-0.02	0.01	-.24**		
EPC x FCSelf	0.00	0.00	-.06		
# Positive (REDSpos)					
Step 1				.14	.14***
EPC	-.10	.03	-.27***		
FCSelf	-.02	.01	-.23**		
Step 2				.14	.00
EPC	-.10	.03	-.27***		
FCSelf	-.02	.01	-.23**		
EPC x FCSelf	.00	.00	.01		
# Perseverant (REDSper)					
Step 1				.04	.04
EPC	-0.02	0.01	-.15		
FCSelf	0.00	0.00	-.10		
Step 2				.04	.01
EPC	-0.02	0.01	-.15		
FCSelf	0.00	0.00	-.10		
EPC x FCSelf	0.00	0.00	-.09		
# Responsibility (REDSres)					
Step 1				.02	.02
EPC	0.01	0.01	.12		
FCSelf	0.00	0.00	-.10		
Step 2				.04	.01
EPC	0.01	0.01	.13		
FCSelf	0.00	0.00	-.11		
EPC x FCSelf	0.00	0.00	.12		
# Ruminative (REDSrum)					
Step 1				.30	.30***
EPC	0.22	0.03	.52***		
FCSelf	0.01	0.01	.12		
Step 2				.30	.00
EPC	0.22	0.03	.52***		
FCSelf	0.01	0.01	.12		
EPC x FCSelf	0.00	0.00	0.00		

Notes: Degrees of freedom at step one = 156, at step two = 155.
* $p < .05$
** $p < .01$
** $p < .001$
# = subscale analysis
FSCS x SCS = Emotional Pain Composite and Fear of Compassion for Self interaction term

Table 3.10 continued

Moderated regression analysis with emotional pain and fear of compassion for self predicting reactions to difficult scenarios and self-care behaviours

Variable (Measure)	B	SE B	β	R^2	Δ R^2
# Self-Critical (REDSscr)					
Step 1				.32	.32***
EPC	0.03	0.01	.45***		
FCSelf	0.01	0.00	.30***		
Step 2				.33	.01
EPC	0.03	0.01	.45***		
FCSelf	0.01	0.00	.30***		
EPC x FCSelf	0.00	0.00	.08		

Notes: Degrees of freedom at step one = 156, at step two = 155.
* $p < .05$
** $p < .01$
** $p < .001$
# = subscale analysis
FSCS x SCS = Emotional Pain Composite and Fear of Compassion for Self interaction term

Table 3.11

Frequency of self-care behaviours reported by participants in open-ended responses

Category	Frequency	Percent of Sample
Diagnosis	139	87.97
Rest	88	55.70
Medical Device	72	45.57
Pharmaceuticals	41	25.95
Treatment	147	93.04
Training Accommodations	47	29.75
Total	534	

behaviours used by participants (r = .02, p = .815), nor was it related to the use of any individual behaviour (Table 3.12).

3.2 SECONDARY ANALYSES

3.2.1 Dichotomous Self-Care Measures

The influence of self-compassion on the relationships between the EPC and dichotomous self-care behaviours (i.e., stopping session, stopping training, reduced frequency, reduced intensity, reduced duration, and injury reporting) was explored using Z-tests. None of the relationships between emotional pain and self-care behaviours were significantly different for the top and bottom self-compassion quartiles (See Table 3.13).

The same analysis was conducted with fear of compassion for self used in place of self-compassion. Significant differences emerged between the correlation coefficients for emotional pain and reduced training duration (bottom fear of compassion for self quartile, r = .05; top fear of compassion for self quartile, r = .50), Z = -2.16, $p < .05$; but not for the other measures of self-care behaviour (See Table 3.14).

3.2.2 Passivity

Because the passivity variable was dichotomized, alternative statistical procedures were used to analyze the data. The method employed to explore the influence of self-compassion on the relationships between the EPC and dichotomous self-care behaviour data was therefore also used to analyze passivity scores. The results indicate that the correlation coefficients between passivity and emotional pain for the top and bottom self-compassion quartiles are not significantly different (See Table 3.13). To analyze the influence of fear of compassion for self on the relationship between emotional pain and passivity this procedure was repeated, substituting fear of compassion for self in place of

Table 3.12

Point-biserial correlations for self-compassion and frequency of self-care behaviour use among participants reported in open-ended responses

Category	*r*	*p*
Diagnostics	.02	.80
Rest	-.08	.33
Medical Devices	.04	.63
Pharmaceuticals	.01	.92
Treatment	.10	.24
Training Accommodations	.01	.90

Notes: n = 158
Degrees of freedom (1)

Table 3.13

Descriptive statistics for passivity and self-care behaviours by low and high self-compassion group

	Low Self-Compassion Group				High Self-Compassion Group				
Variable	n	*M*	SD	*r*	n	*M*	SD	*r*	*Z*-score
Passivity	39	0.18	0.39	0.36*	41	0.12	0.33	0.25	0.52
Completed Practice	39	1.54	0.60	-0.21	41	1.54	0.51	-0.33*	-0.56
Stopped Training	39	1.69	0.47	0.35*	41	1.78	0.42	0.47**	-0.62
Reduced Frequency	39	1.64	0.49	0.44**	41	1.68	0.47	0.44**	0.00
Reduced Intensity	39	1.74	0.44	0.28	41	1.78	0.42	0.55***	-1.42
Reduced Duration	38+	1.47	0.51	0.60***	41	1.46	0.51	0.33*	1.51
Injury Reporting	39	1.97	0.16	-0.29	41	1.93	0.26	0.08	0.94

Notes: r = point biserial correlation coefficient for listed variable and emotional pain composite score
Degrees of freedom for r-scores*:* Low Self-Compassion Group (37), High Self-Compassion Group (39)
\+ = *Degrees of freedom* (36)
Degrees of freedom for Z-scores = 1
* $p < .05$ (two-tailed)
** $p < .01$ (two-tailed)
*** $p < .001$ (two-tailed)

Table 3.14

Descriptive statistics for passivity and self-care behaviours by low and high fear of compassion for self group

	Low Fear of Compassion for Self Group				High Fear of Compassion for Self Group				
Variable	n	*M*	SD	*r*	n	*M*	SD	*r*	*Z*-score
Passivity	40	0.08	0.27	0.24	41	0.10	0.30	0.43**	-0.93
Completed Practice	40	1.33	0.53	-0.23	41	1.54	0.55	-0.26	-0.14
Stopped Training	40	1.90	0.30	0.29	41	1.68	0.47	0.47**	-0.92
Reduced Frequency	40	1.80	0.41	0.18	41	1.68	0.47	0.38*	-0.94
Reduced Intensity	40	1.85	0.36	0.34*	41	1.76	0.44	0.29	0.24
Reduced Duration	37^{+}	1.54	0.51	0.05	41	1.54	0.51	0.50**	2.16*
Injury Reporting	40	1.98	0.16	0.19	41	1.93	0.26	-0.25	-0.27

Notes: r = point biserial correlation coefficient for listed variable and emotional pain composite score
Degrees of freedom for r-scores*:* Low Fear of Compassion for Self Group (38), High Fear of Compassion for Self Group (39)
\+ = *Degrees of freedom* (35)
Degrees of freedom for Z-scores = 1
* $p < .05$ (two-tailed)
** $p < .01$ (two-tailed)

self-compassion. The findings were again non-significant; correlation coefficients for passivity and emotional pain were not significantly different for the top and bottom fear of self-compassion quartiles (See Table 3.14).

CHAPTER 4: DISCUSSION

4.1 GENERAL DISCUSSION

The purpose of this research was to explore the role of self-compassion in competitive women athletes' self-care behaviours following emotionally painful experiences of injury in sport. Self-compassion was not a unique predictor of emotional pain following injury, but findings did indicate that self-compassion is correlated with women's emotional responses to injury. Neither self-compassion nor fear of self-compassion moderated the relationships between emotional pain and self-care behaviours as hypothesized. However, evidence to suggest associations between self-compassion, fear of self-compassion, and some behavioural reactions was observed. The results from this study add to the growing body of evidence that self-compassion might serve as a resource for women athletes when they encounter challenges in sport.

The design of this study was guided by a key conceptual assumption - that participants found their injury experiences emotionally painful. Since self-compassion is extended to the self in response to emotional pain (Neff 2003a, 2003b), the role of self-compassion could only be explored if the women recalled their injuries as emotionally painful events. Hence, athletes were instructed to recall "the most *recent and significant* instance of injury…" to encourage recollection of an emotionally difficult experience. The mean value observed on measures of emotional pain fell above the central value on the respective response scales. This is consistent with past evidence that incurring injury is distressing for athletes (Chan & Grossman, 1988; Leddy et al., 1994; Mosewich et al., 2014; Pargman, 1999; Petitpas & Danish, 1994; Shuer & Dietrick, 1997; Smith, 1996; Smith, Scott, O'Fallon, & Young, 1990; Sutherland et al., 2014; Udry et al., 1997; Wiese-

bjornstal et al., 1998). The range of scores on the EPC extended to negative values; however, this does not indicate an absence of emotional pain. Computation of the EPC – transforming raw scores on the emotional pain measures to *Z*-scores and adding them together – resulted in a mean of zero. Thus, negative scores indicate less emotional pain relative to the mean level experienced by participants.

Self-compassionate athletes experienced less emotional pain following injury, providing support for the first hypothesis. Self-compassion was negatively correlated with negative affect, threat appraisal, and the emotional pain composite score. A pattern of similar results using the Recalled Scenario Responses survey (i.e., negative affect score) emerged in Leary et al.'s (2007) research with undergraduate students and Reis et al.'s (2015) research with women athletes. Findings also indicate that while badness rating and emotional difficulty rating appear to be suitable components of the emotional pain composite score, independently they might not be adequate proxy measures of emotional pain since they were not related to self-compassion. Overall, the observed relationship between self-compassion and emotional pain is congruous with the conceptualization of self-compassion (Neff 2003a, 2003b) and corroborates qualitative evidence linking self-compassion and coping with sport-related injury (Smith, 2013; Sutherland et al, 2014).

Self-compassion as a significant independent predictor of emotional pain was explored (Hypothesis 2). It did not emerge as a significant predictor of any of the emotional pain measures, beyond athletic identity and self-esteem. Self-compassion and self-esteem were correlated ($r = .73$, $p < .01$), in concordance with previous findings (Magnus et al., 2010; Neff, 2009; Neff & Vonk, 2009; Reis et al., 2015). Unlike past

studies, however, self-compassion might not offer injured athletes unique benefits beyond self-esteem when athletic identity is considered (Breines & Chen, 2012; Leary et al., 2007; Neff et al., 2007; Reis et al., 2015).

The results indicate that self-compassion shares variance with athletic identity. Since this is the first study to investigate athletic identity and self-compassion together, precisely how these two constructs are related is unclear at this time. However, speculations and hypotheses can be made at a conceptual level. Athletic identity is associated with psychological distress when athletes face life events that threaten their ability to occupy the athlete role, such as injury (Brewer et al., 2010; Brewer et al., 1993; Erpic et al., 2004; Grove et al., 1997; Murphy et al., 1996; Pearson & Petitpas, 1990; Webb et al., 1998). Self-compassionate people are more effective at coping with challenging life events than people low in self-compassion (Leary et al., 2007; Neff, 2003a, 2003b; Neff et al., 2007). Therefore, the negative correlation observed between athletic identity and self-compassion is conceptually consistent with previous work separately exploring the associations between these constructs and emotional responses to difficult situations.

The negative affectivity dimension on the AIMS might also conceptually overlap with the Self-Compassion Scale. The negative affectivity dimension consists of two items addressing the effect of poor sport performance on overall self-concept: "*I feel bad about myself when I do poorly in sport*" (Item 6); and "*I would be very depressed if I were injured and could not compete in sport"* (Item 7; Brewer & Cornelius, 2001). These statements are a contrast to the kind and balanced mindset associated with a self-compassionate approach (Neff 2003a, 2003b). Empirical evidence supports the notion

that self-compassion acts as a buffer against negative cognition, emotions, and behaviour when women encounter emotionally challenging situations in sport (Ferguson et al., 2014a; Ferguson et al., 2014b; Magnus et al., 2010; Mosewich et al., 2011; Mosewich et al., 2013). The strong emotional reactions that people with high athletic identities tend to have when unable to fulfill the athlete role might be connected to a lower propensity for managing setback with equinamity and self-kindness.

Self-compassion and self-esteem are global constructs related to self-concept (Neff & Vonk, 2009). In contrast, athletic identity is domain specific and develops in athletic contexts (Brewer et al., 1993). Research has shown that domain-specific predictors (e.g., athletic identity) typically account for more variance in domain-specific outcome variables (e.g., emotional pain following injury) than do global measures (e.g., self-compassion and self-esteem; Barrios, 1985; Scheier & Carver, 1989). It has been postulated that global- and domain-specific measures predict different aspects of behaviour (Scheier & Carver, 1987). It is possible that exploring the roles of both global- and domain-specific variables in emotional responses to a contextualized experience impacted the findings. Self-compassion, self-esteem, and athletic identity were all correlated with emotional pain, however, so it appears they all might play a role in athletes' experiences of sport-related injury.

Mixed support was obtained for the third hypothesis concerning the relationships between emotional pain and reactions to emotionally difficult scenarios. Self-compassionate, positive, and perseverant reactions had significant negative relations with emotional pain; but responsibility, stopping the session during which the injury was incurred, and reporting the injury, did not. It is unclear why relationships were not

observed between emotional pain and the latter three behaviours. This might reflect limitations in the measures used to assess self-care behaviours[5]. Unexpectedly, and counter to expectations, emotional pain was positively related to stopping training for a period of time following the injury, reduced training frequency, reduced training intensity, and reduced training duration. Perhaps high levels of emotional pain impacted athletes' psychological preparedness to reenter (or resume) sport. Increasing evidence suggests that athletes might by physically ready to return to competition before they are mentally ready (Podlog & Eklund, 2006). Another explanation for these findings is the retrospective correlational design of this study. Since chronology and causality cannot be inferred, it is possible that emotional pain followed and emerged *as result of* inability to train and being required to reduce frequency, intensity, and duration of training. Full support was found for the fourth hypothesis predicting a positive association between emotional pain and maladaptive reactions (ruminative, passive, and self-critical). This is consistent with previous research purporting that highly charged emotions lead to poor decision making (Bruyneel et al., 2009).

Self-compassion did not have a moderating effect on the association between emotional pain and reactions to emotionally difficult scenarios (Hypothesis 5), nor did fear of self-compassion (Hypothesis 6). High levels of emotional pain were necessary for self-compassion to be relevant as a coping resource (Neff, 2003a); however, this could have introduced a challenge for the moderation analyses due to the potential limited variability in emotional pain. With limited variability in emotional pain, moderating effects may have been difficult to detect. Nevertheless, self-compassion *was* a main

[5] See 4.2 Limitations for further discussion.

predictor of self-compassionate, positive, perseverant, responsible, and self-critical reactions (See Table 3.7). Like self-compassion, fear of self-compassion was also a main predictor of self-compassionate, positive, and self-critical reactions (See Table 3.8). When athletes experience injury, self-compassion appears to play a key in role in cognition, contributing to adaptive thought patterns and mental processing of the event. These findings are consistent with the notion that self-compassionate people approach their physical limitations with greater equanimity (Berry et al., 2010; Neff, 2003b; Terry & Leary, 2011). The observed associations between self-compassion and positive, perseverant, and responsible reactions conceptually replicate previous findings from other health domains showing that self-compassionate people engage in adaptive behaviours to deal with medical conditions (Allen et al., 2012; Brion, Leary, & Drabkin, 2014). However, given the correlational nature of the present study it is important to acknowledge that it cannot be determined whether a self-compassionate mindset fosters adaptive behaviour, behavioural reactions shape a self-compassionate approach to emotional pain, or the relationship between self-compassion and behaviour is bidirectional.

Secondary analyses explored differences in the correlations between emotional pain and self-care behaviours for participants scoring in the top and bottom quartiles on the Self-Compassion Scale. Non-significant results were obtained for all behaviour outcomes. Likewise, differences in the correlations between emotional pain and self-care behaviours for participants scoring in the top and bottom quartiles on the Fear of Self-Compassion Scale were investigated. A stronger correlation between emotional pain and reduced training duration was found for the high fear of self-compassion group compared

to the low fear of self-compassion group, but differences between groups for the other five self-care behaviours did not reach statistical significance. Directionality of the significant finding conceptually aligns with the hypothesized relationship between self-compassion and behaviour. Athletes who experienced high emotional pain and had higher levels of fear of self-compassion were more likely to make poor decisions (i.e. by failing to reduce their training duration) compared to athletes experiencing comparable levels of emotional pain who had lower levels of fear of self-compassion (Terry & Leary, 2011). Yet overall, the predominantly non-significant findings suggest that levels of self-compassion and fear of self-compassion do not greatly influence the relationship between emotional pain and athletes' engagement in self-care behaviours following injury.

Comparisons between quantitative data and the open-ended self-care behaviour descriptions revealed inconsistencies in responding patterns (e.g., 76.1% of women reported taking time away from sport in the quantitative component but only 55.7% mentioned it in their description; see Appendix D). Given these observations, it appears the women might not have always answered the open-ended question as directed; perhaps in some cases at least they did not "list and describe in detail everything [they] did to care for [their] injury". Nevertheless, the question served its purpose to supplement the survey data as additional self-care behaviours (e.g., use of medical devices) emerged during this stage of analysis. However, given this discrepancy, overall, conclusions about self-care behaviours drawn from this study should be interpreted with caution[6].

Previous findings from studies connecting self-compassion to adaptive behavioural outcomes have been mixed. Allen et al. (2012) found that older adults high in

[6] Further discussion in Section 4.2 Limitations

self-compassion were more likely to engage in some self-care behaviours but less likely to engage in others. In Brion et al.'s (2014) work with HIV positive populations, self-compassion was related to better psychological adjustment and more adaptive behaviours. Participants who were lower in self-compassion explicitly indicated that shame about being HIV positive undermined their willingness to engage in adaptive health promoting behaviours; a finding consistent with past research suggesting that feelings of shame about one's medical problems might interfere with treatment adherence (Brion & Menke, 2008). Neither the present research nor the study conducted by Allen and colleagues (2012) accounted for shame. Although self-compassion has been hypothesized to promote adaptive behaviours through effective management of negative affect generally (Terry & Leary, 2011), perhaps shame specifically is a key component that must be present for the relationships to emerge as conceptually proposed.

Evidence thus far indicates that when people experience difficulties with their physical health, self-compassion might have the greatest relevance for emotional and cognitive reactions. Self-compassion is related to better psychological adjustment in challenging circumstances (Leary et al., 2007; Neff et al., 2005; Neff et al., 2007) and health-related situations in particular (Allen et al., 2012; Brion et al., 2014). Perceived seriousness of illness or injury is not related to self-compassion (Terry, Leary, & Mehta as cited in Terry et al., 2011); but the benefits of self-compassion for managing emotional reactions appear to become more pronounced when physical health is poorer (Allen et al., 2012). Serious injuries requiring extended time away from sport might create a situation in which athletes – especially those high in athletic identity – are tempted to expedite the recovery process in order to return to sport faster. A self-compassionate approach to

emotional reactions in combination with mindful awareness of recovery progress will likely contribute to effective injury management and maintenance of overall well-being.

Brief self-compassion inductions have been successful in populations of undergraduate students (Adams & Leary, 2007; Leary et al., 2007), but ineffective in sport-specific work with women athletes (Reis et al., 2015). Alternatively, the 7-day self-compassion intervention Mosewich and colleagues (2013) employed with women athletes was successful in increasing self-compassion and decreasing self-criticism, rumination, and concern over mistakes, indicating a longer program might be necessary for benefits to manifest in sporting samples. Based on the present findings it is unclear how a self-compassion intervention should be structured in order to effectively facilitate athletes' recovery from injury. Injury is a complex and multifaceted experience as evidenced by the array of reactions identified in the literature (e.g., depression, anxiety, confusion; Chan & Grossman, 1988) and further exemplified by the present finding that athletic identity and self-compassion appear to share variance when predicting emotional pain. An important next step will be the identification of factors that contribute to athletes' difficulty coping with injury; factors, such as athletic identity, that can be targeted in a self-compassion intervention.

This study was the first to use quantitative parameters to explore the role of self-compassion in athletes' recalled injury experiences. It adds to the growing body of research linking self-compassion to well-being across populations and settings (e.g., Berry et al., 2010; Breines et al., 2014; Kelly et al., 2010; Rose et al., 2014; Terry et al., 2013). The findings show an association between self-compassion, psychological well-being, and self-care behaviours in injured women athletes. Despite a lack of support for

some hypotheses, findings indicate that self-compassion still might play an important role in women athletes' injury experiences, particularly in thoughts and emotions. Together with previous research, this study supports the idea that self-compassion might be a valuable resource for injured athletes (Mosewich et al., 2014; Smith, 2013; Sutherland et al., 2014). Additional investigation is needed to understand fully the role of self-compassion and the processes by which a self-compassionate mindset might promote adaptive coping in cases of athletic injury.

4.2 LIMITATIONS

Self-selection bias emerged as an unexpected shortcoming in this study. Evidence for this threat to external validity comes from the Injury Recall Task and the Self-Care Behaviours Survey. Although recruitment materials specified that women who had been injured at *any point* in their athletic career were eligible to participate, 97% of respondents reported being *currently* injured. One explanation for the overrepresentation of currently injured athletes may be perceived personal relevance of the study. Recruitment materials might have been more salient to women coping with injury at that point in time than athletes who had already recovered or suffered career-ending injuries. Despite past evidence that athletes often play through injury (DiFiori et al., 2014; Nixon, 1993; Register-Mihalik et al., 2013; Singer, 2004), 76% of women in this study reported taking time away from sport. Prospective participants are less likely to volunteer if they perceive a high probability of being evaluated negatively by researchers (Edgerton, Britt, & Norman, 1947; Riecken, 1962; Rosenthal, 1965). Athletes who continued to participate in sport while injured might have had concerns about being judged poorly, subsequently

making them less likely to volunteer for the study and leading to an underrepresentation of athletes with maladaptive behavioural reactions to injury.

There was a low survey completion rate with 113 people (41.1%) failing to reach the end of the survey. Of those people, 103 (91.2%) quit the study before completing the demographics and injury background components. The reason for this is not clear. Since the recruitment materials were available to a vast audience and eligible participants were required to self-identify, it is possible that people who did not meet the inclusion criteria (e.g., non-athletes and athletes without an injury history) did not thoroughly read the consent form and realized their error when they reached questions that did not apply to them, such as those pertaining to sport participation and injury. This explanation is both plausible and likely considering that two males completed the survey despite recruitment materials and the consent form stating the research was being conducted with females. The majority of undergraduate students completing surveys for research purposes may not thoroughly read consent forms (Pedersen, Neighbors, Tidwell, & Lostutter, 2011). In fact, even when Pedersen et al. were forthright about the purpose of their study and explicitly stated in the consent form that questions regarding the form's content would be asked in the survey, participant demonstrated poor recall. Implications for a truly informed consent process, including whether this constitutes a problem for minimal risk research, is an ongoing discussion.

Construct measurement was a challenge for multiple variables, particularly for the emotional pain and self-care behaviour variables, which presents another limitation in this research. In sport injury literature, no "gold standard" measure of emotional pain exists. The Emotional Responses of Athletes to Injury Questionnaire (Smith, Scott, &

Wiese, 1990b) has been developed for emotional assessment following sport-related injury, but it does not have established psychometric properties. Measures of anxiety and depression are often used to assess emotional responses to injury (Chan & Grossman, 1988; Shuer & Dietrich, 1997; Wiese-bjornstal et al., 1998), but these constructs are narrow and do not capture other negative emotions (e.g., anger). The diversity of instruments used to measure athletes' emotional responses to injury makes it difficult to integrate findings, thus limiting the ability of subsequent research to build on previous work.

Since a robust and psychometrically sound measure of emotional pain could not be identified, the following proxy measures were used: threat appraisal, badness rating, emotional difficulty rating, and negative affect (i.e., the Recalled Scenario Responses survey). In the self-compassion literature, investigations with undergraduate (Leary et al., 2007) and women athlete (Reis et al., 2015) populations have used the Recalled Scenario Responses (RSR) survey to measure negative affect following difficult life events; unfortunately, these studies do not consistently use all five of the emotion scales. Comparisons across studies and samples is, therefore, challenging because the composite negative affect score is a product of the emotion scale scores. Despite these concerns, the RSR had potential to provide a foundation for situating the present research in the self-compassion literature. It was included as a measure of emotional pain for this reason.

It is important to note that the badness rating has also been used in previous self-compassion research (i.e., Ferguson et al., 2014b; Leary et al., 2007). Ferguson et al. (2014b) reported the mean value as a descriptive statistic, but did not use it in hypothesis testing. In their study, Leary and colleagues (2007) prompted participants to recall a

difficult scenario and used the badness rating as a manipulation check to ensure that self-compassion was not related to the type or severity of event selected. Since athletes in the present study were specifically instructed on the type of event to recall - a sport-related injury – it was expected the perceived "badness" of the injury would be influenced by and therefore could serve as an indicator of emotional pain. The correlational results support this assumption.

Together the emotional pain proxy measures produced eight scores that were strongly and positively correlated (r = .36 to r = .65), as predicted. Therefore, a composite score was created and used in hypothesis testing. Internal reliability of the composite score was acceptable (α = .94), suggesting that the measures selected provided a representative indication of athletes' emotional pain. In spite of this, measurement of emotional pain is a limitation in this study.

To the best of my knowledge, a standardized instrument measuring use of self-care behaviours following sport-related injury does not exist. This reflects a key limitation for my study, as well as the sport injury field as a whole. Use of conventional clinic- and home-based measures of rehabilitation adherence (e.g., the Sport Injury Rehabilitation Adherence Scale [Brewer et al., 2002] and The Patient Self-Report Scales of Their Home-Based Rehabilitation Adherence [Bassett, 2003]) is predicated on athletes' initial procurement of medical attention. Past evidence (DiFiori et al., 2014; Nixon, 1993; Register-Mihalik et al., 2013; Singer, 2004), supplemented by the present study, indicates that athletes do not always obtain proper diagnosis and treatment -

particularly in cases of chronic recurring injury[7]. Furthermore, these instruments do not measure premature return to sport or many of the self-care behaviours that emerged in the open-ended self-care description (e.g., use medical devices, use of pharmaceuticals, or training accommodations on return to sport).

Questions were developed for this study to measure athletes' self-care behaviours. Since validity and reliability have not been established for these items, assessment of self-care behaviours was a limitation. Data from the self-care behaviour questions proved problematic for analysis. For example, contrary to predictions, most participants engaged in adaptive behaviours. It is unclear whether this trend was a result of flaws in the survey, participant self-selection basis, or both. Additionally, the terms *injured* and *hurt* were used interchangeably in the self-care behaviour survey. Since athletes were clearly instructed to answer the questions about one particular injury experience (i.e., their most recent and significant injury), the use of both terms should not have caused confusion or impacted responses. Though the distinction between *injured* and *hurt* might have relevance, it is unlikely to have impacted the overall conclusions from the present study. The concerns related to construct measurement, in conjunction with the within-subject inconsistencies observed between survey responses and open-ended descriptions of self-care behaviour, do not lend confidence to the Self-Care Behaviour Survey. Thus, results from this portion of the study should be interpreted with caution.

Because the potential challenges in assessing self-care behaviours were acknowledged going into the study, the Reactions to Emotionally Difficult Scenarios (Ferguson et al., 2014b) survey was also used to assess athletes' reactions to injury. It

[7] Eight of the 31 women (25.8%) who reported experiencing a chronic recurring injury did not obtain a diagnosis from a medical professional for the most recent recurrence.

was originally developed by Ferguson et al. (2014b) for use with hypothetical scenarios and previously employed with females in self-compassion and physical activity research. For the present study, item phrasing was changed from future- to past-tense in order to make the statements applicable to a recalled event. Ferguson and colleagues (2014b) identified use of hypothetical scenarios as a limitation in their work, postulating that greater emotional difficulty would be observed with recalled scenarios due to increased personal relevance. Compared to the original validation study with young women athletes (Ferguson et al., 2014b), the women in the present sample scored slightly higher on self-compassionate reactions ($M = 3.68$ versus $M = 3.56$). Notably lower mean values were observed in this study for the other adaptive reactions: positive ($M = 3.25$ versus $M = 3.70$); perseverant ($M = 3.98$ versus $M = 4.67$); and responsible ($M = 4.01$ versus $M = 4.69$). Similarly, differences were observed among the maladaptive reactions with athletes in the present study scoring slightly higher on passive reactions ($M = 1.37$ versus $M = 1.32$), but markedly lower on ruminative ($M = 2.99$ versus $M = 3.71$) and self-critical reactions ($M = 2.79$ versus $M = 3.60$). It is unclear if and how adjusting and using the instrument for a recalled scenario impacted its validity and reliability.

A final, key shortcoming of the present study is its correlational and cross-sectional design because the conceptually proposed temporal sequence and causal relations between variables cannot be determined. Inability to identify cause-and-effect relations held particular significance for Hypothesis 3 where observed correlations were not in the expected direction. The retrospective, cross-sectional study design employed precludes determination of the antecedent variable (emotional pain or behaviour). Nevertheless, identifying correlates is useful for both practical and theoretical reasons.

From a practical perspective, cross-sectional studies provide an empirical means of screening out potential correlates and generating hypotheses about possible causal relationships (Bauman, Sallis, Dzewaltowski, & Owen, 2002). From a theoretical standpoint, conceptually driven hypotheses about associations can be tested with the findings lending further support to theory, or, alternatively, leading to modification of theory (Bauman et al., 2002). The design used for the present study was appropriate because this research was the first to quantitatively explore self-compassion in recalled injury experiences. Self-compassion was identified as a correlate of emotional pain and self-care behaviour following women athletes' experiences of injury in sport. Conducting an experimental or longitudinal investigation prior to obtaining sufficient evidence for this relationship would have been premature and difficult to justify. Therefore, this study contributes to the progression of the research in this field and provides a necessary foundation from which future studies can build.

4.3 FUTURE DIRECTIONS

Based on the study limitations, an important future direction is identification and implementation of recruitment methods to obtain a representative sample of injured athletes. An approach used by other researchers (Shuer & Dietrich, 1997) - similar to the method used by the National Collegiate Athletic Association (NCAA) to monitor injury occurrences (Dick, Angel, & Marshall, 2007) - is to implement the study protocol with large groups of athletes and *after* data is collected identify those who meet the study eligibility criteria and analyze only their data. Athletes who do not have the psychological tools to cope with injury may remain in denial, mentally minimizing the extent and nature of the injury (Shuer & Dietrich, 1997). Recruitment protocols requiring athletes to self-

identify as injured are, therefore, unlikely to obtain representative samples because people who are in a state of denial will not volunteer. Theoretically, athletes who are in denial might have the most to gain from taking a self-compassionate approach. The issue of self-selection bias holds particular relevance for researchers seeking to use self-compassion interventions with injured athletes. Given that self-compassion has been promoted as a potential coping resource for injured athletes (Mosewich et al., 2014; Sutherland et al., 2014) and a self-compassion intervention was found to reduce negative cognitions in a sample of women athletes (Mosewich et al., 2013), a natural extension would be to explore the utility of a self-compassion intervention for injured athletes. Such an intervention study would benefit from a representative sample; that is, a sample comprised of athletes who meet the diagnostic criteria for injury that includes those who do not consider themselves to be injured. Effective recruitment methods must be identified in order for research to progress in this direction.

Perhaps one of the most interesting findings from my study is the relationship between athletic identity and self-compassion. The connection between these constructs is not understood and requires further investigation. Athletic identity and the social environment in which athletes encounter challenges might have implications for the utility of self-compassion in sport. Avenues of exploration could include: (1) the role of self-compassion in the development of athletic identity, (2) the role of athletic identity in the development of self-compassion, and (3) the relationship between athletic identity and the malleability of self-compassion. Future studies incorporating athletic identity and the social environment have the potential to advance the study of self-compassion in sport and improve the efficacy of self-compassion inductions and interventions. As

researchers learn more about the roles of athletic identity and self-compassion in athletes' injury experiences, it might be that interventions targeting athletic identity hold more promise than those focused on developing self-compassion.

Future research needs to continue exploring the role of self-compassion in athletes' emotional, cognitive, and behavioural responses to sport-related injury. Since this study was a preliminary exploration of self-compassion and sport-related injury, participant eligibility was not restricted by injury type. Though ANOVAs revealed no differences in emotional and behavioural reactions between women with acute, chronic recurring, and chronic overuse injuries[8], future investigations could look at groups of athletes with the same injury. This would likely improve measurement and analysis of self-care behaviours because participants would be prescribed similar, if not identical, treatment protocols.

My research identified associations between self-compassion, emotional pain, and self-care using a cross-sectional design that was conceptually grounded. More definitive support for the role of self-compassion in athletes' injury experiences could be obtained using longitudinal methods. The following chronological boundaries of the injury experience emerged from Bianco's (2011) work with elite skiers: (1) the injury phase, (2) the rehabilitation phase, and (3) the return to full activity phase. Future research following athletes over these phases would provide insight into *when* self-compassion plays the greatest role in experiences of injury and *what* is influenced in each phase (i.e., emotion, cognition, behaviour). Such a study could also provide an indication of when

[8] Self-compassionate reactions was an exception. Athletes with chronic overuse injuries were less likely to report self-compassionate reactions.

athletes may benefit most from and/or be most receptive to a self-compassion intervention.

In light of suggestions that fear of self-compassion - not exclusively absence of self-compassion - be considered when studying how people manage emotionally difficult situations (Ferguson et al., 2014b; Gilbert et al., 2011), fear of self-compassion was included as a variable in the present study. Some support was found for relations between fear of self-compassion and behavioural responses to injury; thus, indicating further exploration of fear of self-compassion in challenging sport-specific situations is warranted. Women athletes have expressed concerns that being overly self-compassionate could potentially hinder athletic development and performance (Ferguson et al., 2014a; Mosewich et al., 2013). In athlete populations, fear of self-compassion has been linked with lower eudaimonic well-being (Ferguson et al., 2014a) and self-criticism has been connected to lower goal progress (Powers, Koestner, Lacaille, Kwan, & Kuroff, 2009). Future research could make valuable contributions to our understanding of the utility of self-compassion in sport by using objective measures of athletic performance to test the validity of athletes' fears. Findings that contradict athletes' concerns could potentially assuage their fears, removing what is presently a prominent barrier for endorsing self-compassion in sport (Ferguson et al., 2014a).

4.4 TAKE HOME MESSAGE

This research contributes to the emerging body of literature exploring the potential benefits of self-compassion in sport and exercise contexts. While other studies have suggested (Berry et al., 2010; Ferguson et al., 2014a; Ferguson et al., 2014b; Mosewich et al., 2014) and provided qualitative evidence (Mosewich et al., 2013; Smith,

2013; Sutherland et al., 2014) that self-compassion might be useful for athletes when they experience injury, this study offers quantitative support. This research is also the first to link self-compassion and self-esteem with athletic identity. That athletic identity and self-compassion might share variance when predicting emotional reactions to sport-related injury is a novel suggestion and has implications for future research. Fear of self-compassion was related to some behavioural outcomes, adding to past research indicating its potential relevance in sporting contexts (Ferguson et al., 2014a; Ferguson et al., 2014b; Mosewich et al., 2014). Finally, self-selection bias was identified as a challenge when conducting retrospective research with injured athletes.

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APPENDIX A: CONSENT FORM

You are invited to participate in a research project entitled "**Exploring the role of self-compassion in women athletes' emotionally painful experiences of injury in sport**". Please read this form carefully, and feel free to email the researchers with any questions you might have.

Researchers:

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Purpose and Procedure: The purpose of this study is to explore the role of self-compassion in women athletes' self-care behaviours following emotionally painful experiences of injury. Self-compassion involves treating oneself with kindness when facing challenges. Since injury is a difficult experience for athletes, it has been suggested by researchers that self-compassion might be a useful resource for athletes when they face the challenges associated with injury. This study will seek to explore this suggestion through an online survey and focus groups. The first phase, the one you are being asked to participate in, is the online survey.

Participation in this study is completely voluntary. If you do choose to participate, you will be asked to complete an online questionnaire package, which inquires about your injury experiences in sport and how you reacted in the most recent situation. The questionnaire package will take approximately 20-30 minutes to complete.

Potential Benefits: Although no benefits of participating in this study can be guaranteed, it will provide insight into the relations between self-compassion and injury experiences in sport. This is an important step for researchers to better understand how self-compassion might contribute to athletes' psychological health. Little research has been conducted in the area of self-compassion, injury, and sport, so the results generated from this study may be beneficial to both you and other women athletes.

Compensation: At the end of the online survey you will be given a chance to enter into a draw to win a $100 gift card for Lululemon. If you choose to enter the draw, the contact information you provide will not be linked to the answers you give in the questionnaire package.

Potential Risks: There is a risk that you may feel mild psychological discomfort when completing the online survey. You will be asked to recall a recent and significant injury; and because this injury may have been an upsetting experience for you, it is possible that reflecting on this experience could cause you psychological discomfort. However, you have the right to refuse to answer any question. Not answering a question or withdrawing from the study will result in no penalty to you or anyone else. You are encouraged to

contact the researchers at any time (before, during, or after the study) to ask any questions that you may have. In the event that you would like to further discuss your feelings regarding the issues discussed in the study, Saskatoon Mental Health Services (306-655-7950) and/or Student Counseling Services (309-966-4920) can assist you.

Storage of Data: All electronic research material will be stored securely on an encrypted and password protected laptop. Paper versions of research material will be stored in a locked filing cabinet. Only the researchers will have access to the data. The data will be stored for a minimum of five years after the completion of the study in a locked office at the University of Saskatchewan. This is standard protocol for any data that may be published in an academic journal and/or presented at a professional conference.

Confidentiality: The data from the study will be sued as part of the student researcher's Masters thesis, as well as to produce a manuscript that we plan to publish in a scholarly journal and/or present at an academic conference. Written reports of the data will be reported in aggregate/summarized form so that it will not be possible to identify individuals. Your identity will be kept confidential. **Your responses on these questionnaire will not be shared with coaches, parents, or other people outside the research team. Your involvement in sport will not be affected as a result of your participation in this study.**

This survey is hosted by Fluid Survey, a USA company subject to US laws. The privacy of the information your provide is subject to the laws of other jurisdictions. By participating in this survey you acknowledge and agree that your answers although stored in Canada may or may not receive the same level of privacy protection.

Right to Withdraw: Your participation is voluntary, and you can answer only those questions that you are comfortable with. Not answering a question or withdrawing from the study will result in no penalty to you or anyone else. You may withdraw from the study for any reason, at any time, without explanation by closing your web browser. Your right to withdraw from the study will apply until your survey responses have been submitted. After this point your anonymous responses cannot be recognized to be withdrawn. You will be advised of any new information that may have bearing on your decision to participate. In no way does your participation waive your legal rights in the vent of research-related harm nor does your participation release the researcher, sponsor, or involved institutions from their legal and professional responsibilities.

Questions: If you have any questions concerning the research project, please feel free to contact the researchers. You are also free to contact the researchers if you have questions at a later time. This research project has been approved on ethical grounds by the University of Saskatchewan Behavioural Research Ethics Board. Any questions regarding your rights as a participant may be addressed to that committee through the Ethics Office toll free at 1-888-966-2975 or ethics.office@usask.ca.

You may contact the research team to find out the results of the study or request a copy of the published manuscript.

Consent to Participate: By completing and submitting the questionnaire, YOUR FREE AND INFORMED CONSENT IS IMPLIED and indicates that you understand the above conditions of participation in this study. Please print this page if you would like to keep this information for your records.

I have read and understood the description provided; I have had an opportunity to ask questions and my questions have been answered. I consent to participate in the research Project.

☐ Yes ☐ No

APPENDIX B1: DEMOGRAPHICS

Select the statements that apply to you for each of the following sections.

Basic Demographic Details.

I identify my gender as: _____

What is your age?
Years: _____
Months: _____

What is your Nationality? _____

Is English your first language?
☐ Yes ☐ No

How would you describe yourself? You may select more than one or specify, if applicable.

☐ Aboriginal	☐ Latin American
☐ Arab	☐ South Asian *(e.g., East Indian, Pakistani etc.)*
☐ Black	☐ Southeast Asian *(e.g., Vietnamese, Cambodian etc.)*
☐ Chinese	☐ West Asian *(e.g., Iranian, Afghan etc.)*
☐ Filipino	☐ White
☐ Japanese	☐ Other: _____

What is your current estimated height?
_____ ☐ cm ☐ inches

What is your current estimated weight?
_____ ☐ lbs ☐ kg

Student Status:

☐ Undergraduate	☐ Graduate
☐ Postgraduate	☐ Not currently a student

Please indicate the year you are in for your current level of education:

☐ First year	☐ Second year
☐ Third year	☐ Fourth year
☐ Fifth year or more	☐ Not applicable

Academic Program:
☐ Social Science (e.g., psychology, sociology etc.)
☐ Humanities (e.g., philosophy, english etc.)
☐ Fine Arts (e.g., performing arts, art etc.)
☐ Science (e.g., biology, kinesiology, chemistry etc.)

- ☐ Engineering
- ☐ Other: _____
- ☐ Not applicable

APPENDIX B2: SPORTS PARTICIPATION AND TRAINING HISTORY

What is the primary sport you are participating in as an athlete?

☐ Ice Hockey	☐ Swimming	☐ Track and Field	☐ Field Hockey
☐ Rowing	☐ Cross-Country Running	☐ Wrestling	☐ Rugby
☐ Basketball	☐ Tennis	☐ Gymnastics	☐ Golf
☐ Soccer	☐ Downhill Skiing	☐ Football	☐ Volleyball

☐ Other: _____

How old were you when you began training for your primary sport?
Years: _____
Months: _____

For your primary sport what is your position/event/discipline (e.g., 800m, shot put, mid fielder)? _____

Please mark where your primary sport falls on the following scale: (an aesthetic sport is one in which the most important aspect is the subjective evaluation by judges of competitive performance)

0	100
Aesthetic	Non-aesthetic

Please mark where your primary sport falls on the following scale:

0	100
Team Sport	Individual Sport

Do you currently have a coach for your primary sport?
☐ Yes ☐ No

If yes, how long have you been coached by your current coach?
Years: _____
Months: _____

What is the highest level of competition you have **ever** competed in at your primary sport?
☐ Local (Competing against athletes from your city/town)
☐ Provincial (Competing against athletes from around the province)
☐ Regional (Competing against athletes from the Western provinces)
☐ National (Competing at National Championships)
☐ Elite for Age (Competing at an international level against athletes of the same age group)
☐ International (Competing for your country of Citizenship at an international level)
☐ Other, please specify… _____

In your primary sport what is the highest level you are **currently** (in the past 2 years) competing at?

☐ Local (Competing against athletes from your city/town)
☐ Provincial (Competing against athletes from around the province)
☐ Regional (Competing against athletes from the Western provinces)
☐ National (Competing at National Championships)
☐ Elite for Age (Competing at an international level against athletes of the same age group)
☐ International (Competing for your country of Citizenship at an international level)
☐ Other, please specify… _____

How many years have you competed in your primary sport at your current level?
☐ < 1 year ☐ 1 to 2 years ☐ 2-5 years
☐ 5 to 10 years ☐ More than 10 years

For your primary sport what seasons per year do you compete (select all that apply)?
☐ Spring ☐ Summer ☐ Fall ☐ Winter

For your primary sport how many **weeks per year** do you train?

For your primary sport how many **days per week** do you train?

For your primary sport how many **sessions per week** do you train?

For your primary sport how many **hours per week** do you train?

For your primary sport and primary position/event/discipline, what is your personal best/records (PB/PR)?
☐ _____ ☐ Not Applicable

For your primary sport and primary position/event/discipline, what is your competitive season record/best (SR/SB)?
☐ _____ ☐ Not Applicable

APPENDIX B3: INJURY RECALL TASK

Please recall and describe in two or fewer sentences, "*the most **recent and significant** instance of injury experienced during or as a result of your sport involvement"*. Keep in mind that the injury you are recalling may have been quite bad, or it could have been very minor.

_____
_____
_____

Please select the body part that best matches the location of your injury:

☐ foot	☐ ankle	☐lower leg
☐ knee	☐ upper leg	☐ hip
☐ torso	☐ back	☐ elbow
☐ wrist	☐ neck	☐ shoulder
☐ head	☐ other, please specify…	

Please indicate which of the following types of injury best describes the one you suffered.

☐ general stress	☐ inflammation	☐ tendonitis
☐ deformity or weakness	☐ loose bodies or debris	☐ impingement
☐ bursitis	☐ stress fracture	☐ joint laxity
☐ sprain or strain	☐ superficial or contusion	☐ internal organ
☐ fracture	☐ open wound	☐ dislocation
☐ nerve	☐ blood vessel	☐ concussion
☐ other, please specify…		

How would you classify your injury?
☐ Acute (e.g., sprains, strains, contusions)
☐ Chronic overuse (e.g., tendinitis, bursitis)
☐ Chronic recurring (e.g., chronic sprained ankle)

Recall the injury and imagine yourself back in that situation as vividly as possible.

How emotionally difficult was this situation for you?

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

How recent was the injury?
Years ago: _____
Months ago: _____
Days ago: _____

How significant was the injury?

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

During which type of athletic event did you get hurt?
☐ Practice ☐ Training ☐ Competition

At what point in the season did you suffer the injury?
☐ Preseason ☐ In season ☐ Postseason

Who diagnosed the injury? Check all that apply.
☐ Self ☐ Coach ☐ Athletic trainer
☐ Doctor ☐ Physiotherapist ☐ Other, please specify…

Are you still bothered by this injury?
☐ Yes ☐ No

Did you complete the practice/training/competition in which you suffered the injury?
☐ Yes ☐ No

As a result of this injury did you stop practicing/training/competing for a period of time?
☐ Yes ☐ No

If yes, for how long? _____

Did you reduce the **frequency** of your sport involvement for a period of time following the injury?
☐ Yes ☐ No

If yes, describe your reduced frequency. _____

Did you reduce the **intensity** of your sport involvement for a period of time following the injury?
☐ Yes ☐ No

If yes, describe your reduced intensity. _____

Did you reduce the **duration** of your sport involvement for a period of time following the injury?
☐ Yes ☐ No

If yes, describe your reduced duration. _____

Did you tell someone you were hurt?
☐ Yes ☐ No

Is yes, who did you tell? Check all that apply.
☐ Medical professional (e.g., doctor, physiotherapist)
☐ Coach
☐ Fellow athletes (e.g., teammate, training partner)

☐ Family member
☐ Friend
☐ Other, please specify…

Please list and describe in detail everything you did to care for your injury (e.g., seek medical treatment, attend physiotherapy, ice treatments, rest).

_____
_____
_____

APPENDIX B4: RECALLED SCENARIO RESPONSES TASK

Please reflect on the same recent and significant injury event you answered the previous questions about. Keep in mind that the injury event you are recalling may have been quite bad, or it could have been very minor.

Please rate how "bad" the injury made you feel.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **sad** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **dejected** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **down** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **depressed** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **nervous** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **tense** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **worried** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **anxious** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **angry** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **irritated** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **mad** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **hostile** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **embarrassed** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **humiliated** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **disgraced** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **ashamed** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **incompetent** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **worthless** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **stupid** about the injury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

Please indicate the extent to which you felt **self-conscious** about the in jury:

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

APPENDIX B5: PAIN APPRAISAL INVENTORY

Please read the following statements. Think about the degree to which you agree or disagree with each statement. Think about what response best fits with how you felt about the pain associated with your injury.

I was concerned that the pain might mean something was wrong with me.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I thought the pain was a chance to prove myself.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I was concerned that the pain might become more than I could manage.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I thought the pain was a test of my strength and ability.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I thought something good might come out of having the pain.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I was worried about getting things done.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I thought the pain made me a stronger person.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I was concerned about how much more pain I could take.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I thought the pain was a chance to learn more about myself.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

The pain seemed threatening.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I thought that without the pain, there would be no gain.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I was worried about being depressed or discouraged because of the pain.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I thought of the pain as a challenge.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I felt controlled by the pain.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I thought the pain tested how well I could manage.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

I thought of the pain as a threat.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

APPENDIX B6: REACTIONS TO EMOTIONALLY DIFFICULT SCENARIOS

Rate the degree to which you reacted in the following ways when you experienced the injury event discussed previously in the questionnaire package.

I tried to be kind to myself.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I tried to make myself feel better.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I kept the situation in perspective.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I was really hard on myself.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I kept a positive outlook on the situation.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I focused on positive things.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I kept striving for something more.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I was able to overcome the obstacle I was dealing with.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I took responsibility to rectify the situation.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I took responsibility to make the situation better.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I dwelt on the situation.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I over-analyzed the situation.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I just gave up.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I quit trying.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I was very critical of myself.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

I was hard on myself.

Not At All	Slightly	Somewhat	Moderately	Very	Extremely
1	2	3	4	5	6

APPENDIX B7: SELF-COMPASSION SCALE

Please read each statement carefully before answering. For each item, indicate how often you behave in the stated manner, using the following scale:

I'm disapproving and judgmental about my own flaws and inadequacies.

Almost Never				Almost Always
1	2	3	4	5

When I'm feeling down I tend to obsess and fixate on everything that's wrong.

Almost Never				Almost Always
1	2	3	4	5

When things are going badly for me, I see the difficulties as part of life that everyone goes through.

Almost Never				Almost Always
1	2	3	4	5

When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world.

Almost Never				Almost Always
1	2	3	4	5

I try to be loving towards myself when I'm feeling emotional pain.

Almost Never				Almost Always
1	2	3	4	5

When I fail at something important to me I become consumed by feelings of inadequacy.

Almost Never				Almost Always
1	2	3	4	5

When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.

Almost Never				Almost Always
1	2	3	4	5

When times are really difficult, I tent to be tough on myself.

Almost Never				Almost Always
1	2	3	4	5

When something upsets me I try to keep my emotions in balance.

Almost Never				Almost Always
1	2	3	4	5

When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

Almost Never				Almost Always
1	2	3	4	5

I'm intolerant and impatient toward those aspects of my personality I don't like.

Almost Never				Almost Always
1	2	3	4	5

When I'm going through a very hard time, I give myself the caring and tenderness I need.

Almost Never				Almost Always
1	2	3	4	5

When I'm feeling down I tend to feel like most people are probably happier than I am.

Almost Never				Almost Always
1	2	3	4	5

When something painful happens I try to take a balanced view of the situation.

Almost Never				Almost Always
1	2	3	4	5

I try to see my failings as part of the human condition.

Almost Never				Almost Always
1	2	3	4	5

When I see aspects of myself that I don't like, I get down on myself.

Almost Never				Almost Always
1	2	3	4	5

When I fail at something important to me I try to keep things in perspective.

Almost Never				Almost Always
1	2	3	4	5

When I'm really struggling I tend to feel like other people must be having an easier time of it.

Almost Never				Almost Always
1	2	3	4	5

I'm kind to myself when experiencing suffering.

Almost Never				Almost Always
1	2	3	4	5

When something upsets me I get carried away with my feelings.

Almost Never				Almost Always

1	2	3	4	5

I can be a bit cold-hearted towards myself when I'm experiencing suffering.

Almost Never				Almost Always
1	2	3	4	5

When I'm feeling down I try to approach my feelings with curiosity and openness.

Almost Never				Almost Always
1	2	3	4	5

I'm tolerant of my own flaws and inadequacies.

Almost Never				Almost Always
1	2	3	4	5

When something painful happens I tend to blow the incident out of proportion.

Almost Never				Almost Always
1	2	3	4	5

When I fail at something that's important to me I tend to feel alone in my failure.

Almost Never				Almost Always
1	2	3	4	5

I try to be understanding and patient towards those aspects of my personality I don't like.

Almost Never				Almost Always
1	2	3	4	5

APPENDIX B8: FEAR OF SELF-COMPASSION SCALE

Below are a series of statements that we would like you to think carefully about and then circle the number that best describes how each statement fits you.

I feel that I don't deserve to be kind and forgiving to myself

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

If I really think about being kind and gentle with myself it makes me sad

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

Getting on in life is about being tough rather than compassionate

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

I would rather not know what being 'kind and compassionate to myself' feels like

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

When I try and feel kind and warm to myself I just feel kind of empty

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

I fear that if I start to feel compassion and warmth for myself, I will feel overcome with a sense of loss/grief

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

I fear that if I become kinder and less self-critical to myself then my standards will drop

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

I fear that if I am more self-compassionate I will become a weak person

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

I have never felt compassion for myself, so I would not know where to begin to develop these feelings

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

I worry that if I become too compassionate to myself I will lose my self-criticism and my flaws will show

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

I fear that if I develop compassion for myself, I will become someone I do not want to be

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

I fear that if I become too compassionate to myself others will reject me

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

I find it easier to be critical towards myself rather than compassionate

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

I fear that if I am too compassionate towards myself, bad things will happen

Don't Agree At All		Somewhat Agree		Completely Agree
0	1	2	3	4

APPENDIX B9: ROSENBERG SELF-ESTEEM SCALE

Below is a list of statements dealing with your general feelings about yourself.

On the whole, I am satisfied with myself.

Strongly Agree	Agree	Disagree	Strongly Disagree
3	2	1	0

At times, I think I am no good at all.*

Strongly Agree	Agree	Disagree	Strongly Disagree
3	2	1	0

I feel that I have a number of good qualities.

Strongly Agree	Agree	Disagree	Strongly Disagree
3	2	1	0

I am able to do things as well as most other people.

Strongly Agree	Agree	Disagree	Strongly Disagree
3	2	1	0

I feel I do not have much to be proud of.*

Strongly Agree	Agree	Disagree	Strongly Disagree
3	2	1	0

I certainly feel useless at times.*

Strongly Agree	Agree	Disagree	Strongly Disagree
3	2	1	0

I feel that I'm a person of worth, at least on an equal plane with others.

Strongly Agree	Agree	Disagree	Strongly Disagree
3	2	1	0

I wish I could have more respect for myself.*

Strongly Agree	Agree	Disagree	Strongly Disagree
3	2	1	0

All in all, I am inclined to feel that I am a failure.*

Strongly Agree	Agree	Disagree	Strongly Disagree
3	2	1	0

I take a positive attitude toward myself.

Strongly Agree	Agree	Disagree	Strongly Disagree
3	2	1	0

APPENDIX B10: ATHLETIC IDENTITY MEASUREMENT SCALE

I consider myself an athlete.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

I have many goals related to sport.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

Most of my friends are athletes.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

Sport is the most important part of my life.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

I spend more time thinking about sport than anything else.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

I feel bad about myself when I do poorly in sport.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

I would be very depressed if I were injured and could not compete in sport.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

APPENDIX C: DEBRIEFING LETTER

I would like to thank you for your participation in this research project. This research is interested in the role of self-compassion in competitive women athletes' self-care behaviours following emotionally painful experiences of injury. The research is designed in order to understand the relationships between emotional pain, self-compassion and self-care behaviours in competitive women athletes following injury (phase one) and to identify and explore factors influential to the use of these self-care behaviours (phase two).

Please remember that any data pertaining to your participation will be kept confidential. The data will be stored for five years in a password protected file and will only be accessible to the researcher, Nicole Spencer, and the research supervisor, Dr. Kent Kowalski. Once all the data is collected and analyzed for this project, the results will be used as part of the requirements for a Master of Science Degree. If you are interested in receiving more information regarding the results of this project, or if you have any questions or concerns, please contact me by email at nicole.spencer@usask.ca. You can also contact my supervisor, Dr. Kent Kowalski at kent.kowalski@usask.ca.

Again, thank you so much for your time and contributions to this research project.

Sincerely yours,

Nicole Spencer

APPENDIX D: QUANTITATIVE AND OPEN-ENDED DATA COMPARISON

Comparison of participants' self-care behaviour reporting for quantitative survey items and open-ended responses on the online questionnaire

	Quantitative Data		Open-Ended Data	
Self-Care Behaviour	*N*	%	*N*	%
Medical Diagnosis	144	90.57	139	87.97
Rest	121	76.10	88	55.70
Training Accommodations	146	91.82	47	29.75
Total	139		138	

Notes. The self-care behaviour categories Medical Devices, Pharmaceuticals, and Treatment emerged from analysis of the open-ended data and did not have parallel quantitative items in the online questionnaire